European Union Policymaking in the Field of Air Traffic Management

The endeavor to implement functional airspace blocks in light of fragmented national interests

A case study on the Functional Airspace Block Europe Central (FABEC)

Thesis

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For my parents and family in Austria and Sweden.

EXECUTIVE SUMMARY

Background

The provision of air navigation services (ANS) is a sovereign prerogative of individual nation states. As a result, today's European air traffic management (ATM) system is highly fragmented, impeding smooth and efficient traffic flows and causing delays and additional costs for airspace users. As earlier attempts to integrate ATM in Europe did not overcome the problem of fragmentation, the European Commission launched the *Single European Sky* (SES) initiative in 1999. One key element of SES is the introduction of so-called *functional airspace blocks* (FABs), which are to be designed no longer to reflect national boundaries, but according to operational requirements, and encompassing the airspace of several states. As FABs have a strong impact on national sovereignty, the present study aims to answer the question of whether the European Union will be successful in promoting their implementation. The specific case analyzed for this purpose is the *Functional Airspace Block Europe Central (FABEC).* As it covers the area with the highest air traffic density in Europe, FABEC plays a paramount role for the Single European Sky. A first significant institutional step was taken when a treaty between FABEC member states was signed at the end of 2010. However, although bi- and multilateral collaboration between air navigation service providers in the FABEC area has intensified, major challenges prevail in terms of functional airspace redesign and in the attempt to find specific institutional arrangements that go beyond simple forms of cooperation.

Theoretical and methodological approach

To identify the supporting and constraining elements affecting FAB development, the study reverts to two theories of political integration offering conflicting viewpoints on the factors that are supposed to be decisive for the progress of integration. The *liberal intergovernmentalist* account proposes a 'bottom-up' perspective, in which domestic societal actors determine the need for enhanced cooperation in a specific policy area. This need is

subsequently accommodated by national governments and taken to an international negotiation setting, where the level of integration is 'bargained' between states. Supranational organizations only play a minor role in this context and merely serve as facilitators of negotiation processes. *Rationalist supranationalism* identifies growing regulatory structures and 'path dependencies' at the supranational level, which nation states find increasingly difficult to escape from. Hence, integration is rather governed by supranational organizations, leaving little room for unilateralist leanings of individual states. Based on the first theory, the study has compared the relative influencing power of various domestic stakeholders assumed to be relevant in the area of ATM in terms of their impact on governmental preferences related to cooperation and integration: national defense authorities, air navigation service providers, major air carriers, and staff associations representing air traffic controllers. It has then attempted to determine differentiations in bargaining power between FABEC states. Based on the second account, EU regulatory activity in the field of ATM was examined in relation to the evolution of competences assigned to the institutions of the European Union.

Conclusions and possible way forward

It can be concluded from the analysis that, with regard to the implementation of functional airspace blocks, the EU is considerably limited by the sovereign interests of states. The Union lacks the necessary legal basis to take supranational decisions with respect to national airspace and infrastructure. However, supranational pressure is steadily growing and becomes harder for nation states to avoid. It was demonstrated that the European Commission searches for ways to make extensive use of its regulatory capacity even in the absence of additional competences. The two subsequent timeframes under analysis, referred to as SES I and SES II, have not only seen a quantitative increase in regulatory density with a potential of advancing FAB development, but also the emergence of an intelligent framework of incentives, which may push states into integrative solutions without having to touch on sovereignty directly.

Yet, since the ultimate decision lies with the nation state as to which form and to what extent integration will be effected, the final outcome is still uncertain. It was shown that government positions largely correlate to those of the military and the ANS providers; these are assessed to be the most influential, due to their strong institutional involvement

in FABEC matters. Governments' main focus is on maintaining national supremacy in military issues, be it airspace or infrastructure; furthermore, they do not support far-reaching steps of integration in ANS provision at this time. The FABEC Treaty, the founding document of the Functional Airspace Block Europe Central, reflects these rather conservative state preferences. Although the decision-making scope provided by the agreement goes as far as including quite sensitive areas such as military airspace design, the unanimity principle allows *all* contracting states to support or reject functional steps of integration as they see fit. At this stage, no evidence could be found regarding the use of individual bargaining powers by the states involved.

Within the context of a governmental preference structure that supports the continuous existence of national air navigation service providers, the latter find themselves in an environment dominated by competition rather than cooperation. The prospect of 'integration' seems to create apprehension because it implies restructuring, which may result in the loss of organizational units or business opportunities. Moreover, competition for traffic volumes and corresponding revenues poses an impediment to a traffic-flow oriented route and airspace structure, as redesigned airways may no longer feed through a provider's airspace. The European Commission thus should consider measures to eliminate competitive thinking and promote collaboration between providers. The introduction of a revised revenue allocation mechanism (based on a FAB single unit rate) in conjunction with a 'Best-in-Class' standard for air navigation service provision, which should aim at positively incentivizing cooperation, could be one step in that direction.

CONTENTS

Acknowledgements

Air traffic control is my passion. Since the age of eleven I have dreamt of becoming an air traffic controller, and I feel very privileged to actually be part of this wonderful profession. When beginning my university studies in Political Science, it was obvious to me that I would also focus my research on this fascinating domain of aviation. Writing this dissertation provided me with new experience and a deeper insight into the many facets of air traffic management.

I would like to thank Prof. Dr. Dieter Ruloff and Prof. Dr. Dirk Lehmkuhl for their continuous support and flexibility during the various stages of my work and for their feedback on the drafts which I irregularly submitted to them. I also thank them for their kind readiness to act as referees of the present study. Thanks also go to Dr. Francis Schubert, Mr. Matthias Schaad, Mr. Christian Schneider, Dr. Klaus Affholderbach, Mr. Edouard Pitton, Dr.-Ing. Jörg Wiesner, and Mr. Marc Baumgartner, for providing me with very helpful input, comments, or contacts. And I am thankful to Ms. Ciara Murray for having thoroughly proofread my thesis.

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List of acronyms and abbreviations

ACC	Area Control Center
AEA	Association of European Airlines
ANA	L'Administration de la Navigation Aérienne (Luxembourg)
ANS	Air Navigation Services
ANSE	Air Navigation Service Employee
ANSP	Air Navigation Service Provider
AIM/AIS	Aeronautical Information Management / Service
APATSI	Airport – Air Traffic Service Interface
ASB	FABEC ANSP Strategic Board
ASM	Airspace Management
ATC	Air Traffic Control
ATCO	Air Traffic Controller
ATF(C)M	Air Traffic Flow (and Capacity) Management
ATM	Air Traffic Management
ATS	Air Traffic Services
ATSEP	Air Traffic Safety Electronics Personnel
BATNA	Best Alternative to Negotiated Agreement
CAA	Civil Aviation Authority
CANSO	Civil Air Navigation Services Organisation
CBA	Military Cross-border (Training) Area
CDM	Collaborative Decision-making
CEO	Chief Executive Officer
CFMU	Eurocontrol Central Flow Management Unit
civ	civil
CMIC	Eurocontrol Civil-Military Interface Standing Committee
CNS	Communication, Navigation and Surveillance Services
CODA	Eurocontrol Central Office for Delay Analysis
CoR	European Union Committee of the Regions
CRCO	Eurocontrol Central Route Charging Office
CTOT	Calculated Take-off Time
CTR	Control Zone
DFS	Deutsche Flugsicherung GmbH

DGAC	Direction générale de l'Aviation civile (France)
DSNA	Direction des Services de la Navigation Aérienne (France)
EASA	European Aviation Safety Agency
EATCHIP	European Air Traffic Control Harmonisation and Implementation Programme
EATM(P)	European Air Traffic Management (Programme)
EC	European Community
ECAC	European Civil Aviation Conference
ECOSOC	United Nations Economic and Social Council
EEC	Eurocontrol Experimental Center
EESC	European Economic and Social Committee
EGATS	Eurocontrol Guild of Air Traffic Services
EP	European Parliament
EU	European Union
FAA	Federal Aviation Administration (United States of America)
FAB	Functional Airspace Block
FABEC	Functional Airspace Block Europe Central
FATCOA	French Air Traffic Controllers' Association
FOCA	Federal Office of Civil Aviation (Switzerland)
FPSG	FABEC Project Steering Group
GAT	General Air Traffic
GdF	Gewerkschaft der Flugsicherung
GLCCA	Guilde Luxembourgeoise des Contrôleurs de la Circulation Aérienne
GNSS	Global Navigation Satellite System
HLG	High Level Group
HLIB	FABEC High Level Implementation Board
IANS	Eurocontrol Institute of Air Navigation Services
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICB	Single European Sky Industry Consultation Body
IFR	Instrument Flight Rules
IP	Implementation Package
KPA	Key Performance Area
KPI	Key Performance Indicator
LVNL	Luchtverkeersleiding Nederland
MARC	MOSAIC ATM Regional Coordination

MATSE	Ministerial Meeting on the Air Traffic System in Europe
MET	Meteorological Services for Air Navigation
mil	military
MoD	Ministry of Defense
MoT	Ministry of Transport
MUAC	Eurocontrol Maastricht Upper Area Control Center
NGATC	The Netherlands Guild of Air Traffic Controllers
(N)SA	(National) Supervisory Authority
OAT	Operational Air Traffic
PMO	FABEC Project Management Office
PRB	Performance Review Body of the Single European Sky
PRC	Eurocontrol Performance Review Commission
QMV	Qualified Majority Voting
RADAR	Radio Detection and Ranging
SC	Standing Committee
SES	Single European Sky
SESAME	Single European Sky Implementation Programme
SESAR (JU)	Single European Sky ATM Research (Joint Undertaking)
SMS	Safety Management System
SRC	Eurocontrol Safety Regulation Commission
SSB	FABEC States Strategic Board
SSC	Single Sky Committee
SwissATCA	Swiss Air Traffic Controllers' Associations
TEC	Treaty on establishing the European Community
TEN	Trans-European Networks
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TMA	Terminal Control Area
TRACON	Terminal Radar Approach Control (United States of America)
TUEM	Trade Union Eurocontrol Maastricht
UAC	Upper Area Control Center
VFR	Visual Flight Rules
6SFPG	6-States FABEC Group

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INTRODUCTION

Air traffic management[1] plays a pivotal role in aviation. Its significance has notably increased during the last 20 years as a result of the rapid growth of air traffic subsequent to deregulation and liberalization of the air transport sector, starting in the United States of America and extending to Europe, Asia, and Latin America.[2] The necessity of coordinating the rising number of aircraft operating in the skies and to provide them with continuous supervision from departure to arrival had already been identified in the early 1930s when the first aerodrome control towers were established in the U.S. Since then, the development of ever faster aircraft able to fly in almost all weather conditions required the introduction of an air navigation service system on a global scale.

Under international law, nation states enjoy sovereignty over their airspace and thus full prerogative in respect of its use.[3] From the very beginning, regulation and provision of air navigation services have therefore been the responsibility of individual states. However, given the fact that air transport is a transnational activity, there is an obvious need for a global regulatory approach. In 1944, the International Civil Aviation Organization (ICAO)[4] was founded to define worldwide standards and facilitating the conduct of civil aviation across national boundaries. Over time, an extensive number of standards and recommended practices have developed within the framework of ICAO and have been put down in 18 annexes to the ICAO founding document, the *Convention on International Civil Aviation*. They also include rules and procedures related to air traffic management.

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1 The term 'air traffic management' (ATM) is used throughout this thesis to refer to the totality of services and functions comprised by both ATM and air navigation services (ANS), the two of which partly complement each other, but also share specific services (see table 1).

2 See, for instance, Poole/Butler (1998), Sinha (2001), Smith/Cox (2008).

3 In accordance with article 1 of the Convention on International Civil Aviation.

4 The International Civil Aviation Organization (ICAO) is a specialized agency of the United Nations linked to the Economic and Social Council (ECOSOC) and seated in Montreal (Canada). In 2011, ICAO counted 190 contracting states. See www.icao.int.

What is Air Traffic Management?

Air traffic management (ATM) and *air navigation services* (ANS) constitute overarching terms subsuming a multitude of different services and functions relevant to ensure the safe and efficient movement of aircraft during all phases of flight. *Air traffic services* (ATS) may be considered as the principal component of both ATM and ANS. The term ATS comprises all services destined to prevent collisions between aircraft in the air and on the ground, to ensure an efficient and orderly traffic flow, to supply aircrews with all information relevant for a safe operation of their flight, and to notify and assist appropriate organizations with regard to aircraft in need of search and rescue aid.[5] These ATS functions are referred to as *air traffic control service* (ATC), *flight information service* (FIS) and *alerting service* (ALRS) respectively. ATC service is only provided in specifically designated airspace, referred to as *controlled airspace*, which is normally defined around busy airports, along air routes, and in the upper airspace,[6] where aircraft operate under *instrument flight rules* (IFR)[7] and thus require protection from other aircraft.

There are three functionally distinct types of operational units providing air traffic services: *Aerodrome control* units are installed at controlled airports and located in a physical control tower able to visually observe the relevant airport movement area. These towers are responsible for controlling traffic mainly on runways, taxiways, and in the immediate vicinity of an airport (usually designated *control zone* or CTR). *Approach control* units offer air traffic services to arriving and departing aircraft, typically within a *terminal control area* or TMA. At major airports, this task is commonly assigned to a dedicated unit, while approach control units serving smaller aerodromes are often combined with the respective aerodrome control unit or an *area control* unit. Area control units are located in an *area control center* (ACC) and ensure the provision of air traffic services for en-route traffic in a specified block of airspace, which usually encompasses all controlled airspace outside CTRs and TMAs. Consequently, area control centers cover the largest part of airspace in geographical terms.

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5 Article 2.2. of Annex 11 to the ICAO Convention.

6 Usually above 19’500 feet = flight level 195.

7 IFR = Rules governing flight under (weather) conditions where navigation cannot be accomplished through visual reference, but rather through the use of on-board instruments and electronic navigation signals (as opposed to VFR = Visual Flight Rules).

All three types of ATS units are geographically or functionally subdivided into a number of *control sectors*, depending on the size and complexity of the airspace or airport under control. Every sector is manned by one or two *air traffic controllers* (ATCOs), responsible for managing all traffic within their sector. ATCOs are in continuous radio contact with the flight crews they are responsible for and provide them with the necessary instructions and information to ensure safe and efficient traffic handling. Aircraft are progressively handed over between successive sectors, thereby ensuring permanent monitoring and control of flights from the point of departure until destination. Updated flight plan data, such as flight identification, type of aircraft, route of flight, and altitude, is made available to every downstream sector in a timely manner to allow for advance situational awareness and traffic planning by the respective controller. While visual observation is the prevailing means of controlling aircraft from an aerodrome control tower, *radar*[8] is used at approach and area control units – particularly in busy traffic environments – to obtain the current position and flight identification of aircraft. Over oceanic and other remote areas where no radar is available, position information is acquired by GNSS[9] position downlink from the aircraft or, if such procedures are not applicable in that region, by regular oral position reports transmitted by the flight crew. The air traffic controllers' task is to keep all aircraft within their sector apart from each other at defined separation minima in accordance with the type of surveillance equipment used, and to ensure efficient traffic throughput.

In order to be able to execute ATS functions, appropriate technical infrastructure is required. This is made available by the infrastructural component of ANS, which includes *communication, navigation and surveillance services* (CNS). Amongst others, CNS assure the operation and maintenance of radio, telephone and radar systems, as well as of all navigational infrastructure on the ground. A third type of service, which is part of ANS, is *meteorological services for air navigation* (MET), aiming at supplying aircrews with up-to-date flight weather information. Finally, ANS comprise the provision of *aeronautical information services* (AIS), designed to systematically collect and distribute all necessary

[8] RADAR = *Radio Detection and Ranging*; a system using electromagnetic radio waves to detect the range, direction, speed and (possibly) altitude of fixed or moving objects (primary surveillance radar). Secondary surveillance radar systems (SSR) are used to obtain additional information such as identification, altitude and other current flight data by triggering a reply from an on-board transponder.

[9] GNSS = *Global Navigation Satellite System* is a satellite-based system used to obtain precise information about the geographical location on the earth's surface.

information for the safe conduct of flight, including, for example, updates on the operational status of airport and ANS infrastructure.

As of the mid-1990s – in light of growing air traffic – the rather short-term oriented ATS functions were complemented by more strategic and pre-tactical planning tools in order to better manage the increasingly scarce resource of airspace. One of these tools, *airspace management* (ASM), intends to maximize the utilization of airspace by dynamic and flexible assignment of specific airspace portions to various users in accordance with their requirements.[10] This is used in particular to efficiently accommodate civil and military air traffic. *Air traffic flow and capacity management* (ATFCM) is a centralized function designed to ensure that available air traffic control capacity and traffic volumes are well balanced at all times. This is effected by comparing maximum sector or airport capacity, as reported by an air navigation service provider, to the traffic demand within a specified timeframe and subsequently delaying excess traffic at the departure aerodrome by means of a calculated take-off time (CTOT) allocated to the aircraft concerned. ATFCM is an essential element for protecting ATS units from temporary overload and thus significantly contributes to safe air traffic control operations.

All tasks carried out in the framework of ATS, ASM, and ATFCM are considered air traffic management (ATM) functions. Although they do not include the remaining ANS components (CNS, MET, and AIS), the term 'air traffic management' shall – throughout this thesis – be considered to cover both ATM and ANS.[11] The different services are summarized in the following table:

[10] The so-called *Flexible Use of Airspace* (FUA) concept.

[11] In principle, all types of ATM/ANS services and functions are applicable to both civil and military airspace users. Civil aircraft, as well as military aircraft operating in civil airspace in accordance with the rules and procedures of ICAO, are considered *General Air Traffic* (GAT); military aircraft operating as GAT may be controlled either by a civil, military, or combined civil/military ATS unit. Military aircraft operating in designated military airspace according to the rules specified by appropriate national authorities are considered *Operational Air Traffic* (OAT). OAT is normally controlled by a military ATS unit, as additional services such as tactical fighter control may be required (GAT/OAT definitions according to Eurocontrol EATM, Glossary of Terms).

<table>
<tr><td rowspan="5">Air Traffic Management (ATM)</td><td colspan="2">Airspace Management (ASM)</td></tr>
<tr><td colspan="2">Air Traffic Flow and Capacity Management (ATFCM)</td></tr>
<tr><td rowspan="3">Air Traffic Services (ATS)</td><td>Air Traffic Control Service (aerodrome/approach/area control)</td></tr>
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<tr><td colspan="2">Meteorological Services (MET)</td></tr>
<tr><td colspan="2">Aeronautical Information Services (AIS)</td></tr>
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Table 1: Overview of types of services provided in the framework of ATM/ANS

Air traffic management – a fragmented system in a transnational domain

Despite the development of a comprehensive set of global standards for civil aviation in the framework of ICAO, harmonization in the ATM domain was mainly focused on enabling aircraft to operate as seamlessly as possible between different countries and therefore basically limited to establishing common rules for navigational facilities and communication procedures. The remaining ATM infrastructure, however, was to a large extent exempted from standardization. This resulted in a complicated patchwork of nationally grown air navigation service providers (ANSPs) applying diverse standards in terms of technology, airspace organization, operating procedures, service quality, and training. Today, 67 area control centers are operational in Europe alone, mostly featuring distinct types of equipment with only limited technical and operational interoperability. Besides complicating the exchange of ATM-relevant data between centers, this entails high costs for procurement and maintenance of technical systems. Moreover, the concurrence of these control centers' areas of responsibility with national borders hampers the implementation both of an optimized sector setup and of a pan-European route structure that would be able to accommodate the main traffic flows over the continent. Although bilateral agreements have been established to manage the interfaces between ANSPs and to ensure the uninterrupted availability of services across state borders, they do not take into account the 'big picture'. National military training areas, frequently located in regions of high-density civil air traffic, add to the suboptimal route network. Until recently, the lack of harmonized European training standards for air traffic controllers prevented international

mobility in the face of widespread staff shortages. Differences also exist with regard to the institutional setup of ANSPs, ranging from state agencies (e.g. France), government-owned corporations (e.g. Switzerland), to private companies (e.g. the UK).[12]

The various deficiencies of a disintegrated air traffic management system have become even more evident since the economic upturn in the aviation sector, which started in the 1990s. As a result, the European air traffic network gradually reached its capacity limit, causing significant delays and reducing the safety margins in the system. Fragmentation also brought higher costs which are mainly borne by the customers of ATM, the airspace users. Commercial network airlines, whose operation is based on short connections in accordance with the hub-and-spoke principle,[13] are particularly sensitive to delays, as they may generate compensation costs to passengers; an inefficient air route network leads to unnecessary route extensions and increased fuel consumption, which is costly not only from an economic but also an environmental point of view. Furthermore, a multitude of technically and operationally incompatible air traffic control centers operated by a number of diverse air navigation service providers each with their own administration and support structure, is another significant cost driver. ANS provision is financed by en route charges that cover area control services, and by terminal charges, which cover for approach and aerodrome control services. En route charges are calculated by multiplying the 'great circle'[14] distance flown between the entry and exit point of a specific area of responsibility by the 'weight factor' of the aircraft concerned (resulting in the number of 'service units') and by a so-called *unit rate*, which is determined by the respective air navigation service provider (no distance factor applies for terminal charges).[15] Hence, revenues for ANSPs directly depend on the number of aircraft operating within their airspace. Since continuous availability of ANS infrastructure needs to be maintained irrespective of traffic demand, a

[12] For a comprehensive list of deficiencies of the European ATM system, see European Commission (1996, 1999, 2000, 2008).

[13] The 'hub-and-spoke' principle implies a type of airline operation where long-range and short-range flights to and from a specific airport are timed and coordinated to permit relatively short connections between respective flights, thereby optimizing network capacity. See, for instance, Kaemmerer (2000).

[14] The *great circle* is the intersection of a sphere and a plane passing through the center point of the sphere, providing the shortest distance between two points on the surface of that sphere (from www.wikipedia.org, October 2011). It provides an approximation of the optimum horizontal trajectory of a flight from one point of the earth's surface to another.

[15] See Regulation (EC) 1794/2006 as amended by Commission Regulation (EU) 1191/2010, Annexes IV/V.

full cost recovery principle was originally introduced, permitting ANSPs to adapt their charges according to traffic numbers, thereby ensuring constant revenue. An obvious shortfall of this mechanism is that air navigation service providers embedded in a monopolistic and government controlled environment lack the necessary incentive to control their operating costs, as these can always be shifted onto customers. The combination of these factors raised growing criticism about the air traffic management system from airspace users.[16]

The inadequacy of a nation state based ANS system was already recognized at the inception of European commercial civil aviation. In 1960, the *European Organisation for the Safety of Air Navigation* (Eurocontrol) was founded to create a unified European structure for air navigation service provision. However, this goal was never achieved. Although cooperation between air navigation service providers and harmonization in various air traffic management sub-domains has advanced since the establishment of Eurocontrol, basic issues remained unresolved, largely due to contravening national interests.[17] This prompted the Commission of the European Union[18] in 1999 to launch the *Single European Sky* initiative, a comprehensive integration program, which aims at establishing a European air traffic management system beyond national boundaries. Mainly due to the institutional advantages of the EU in terms of its (qualified) majority voting principle and rule enforcement opportunities, the Single European Sky ought to have a higher chance of success compared with the Eurocontrol project, the latter being a purely intergovernmental approach (Ladenbauer 2005). Nevertheless, substantial elements of the Single Sky program are still subject to the decision-making authority of EU member states and thus may be affected by potential discrepancies of national preferences.

[16] See, for instance, AEA/IATA (2002).

[17] See section 2.1.

[18] In this thesis, the term 'European Union' is used generically to refer to the current economic and political union of 27 European member states and its institutions as constituted by the Treaty of Lisbon, but also to all its predecessor constructions based on former treaties. Deviations from this principle are only made in specific historical contexts.

EU policymaking in a context of national diversity

Policymaking in the European Union (EU) is aimed at harmonizing rules and removing market barriers between member states to enable the free exchange of people, goods, services, and capital; in short, to create a common single market. Moreover, its purpose is to find coordinated answers to transnational issues and problems that cannot be successfully dealt with by nation states on an individual basis. Hence, the goal of the EU is to promote cooperation and integration in all areas where this is expected to result in an overall improvement of the political, economic or societal situation of EU citizens. However, the definition of shared objectives and standards among historically grown and culturally diverse nation states is not always a simple task; often individual interests prevail which are not necessarily compatible. The challenge of the EU is to find concerted and effective solutions, whilst taking into account various national interests. The variety of interests obviously depends on the policy area in question. Areas where most member states will equally benefit from supranational policies will experience little difficulty in this respect; in other domains, the perceived disadvantages resulting from common rulemaking may be more substantial. This appears to be the case, for example, when matters of national security are concerned. Security policy is an area where no relevant competences have been transferred to the supranational level and which is only marginally tackled by the EU. Consequently, areas of conflict may emerge with regard to issues where, from a functional perspective, a coordinated solution is indicated, but for which nation states are reluctant to transfer respective competences for reasons of individually competing preferences. Hence the question arises what instruments the European Commission – the agenda setter and policy proposer of the EU – uses to advance integration in contended policy areas.

The subject under investigation in this thesis, the integration of air traffic management in Europe, is an excellent example of the tension between the functional and operational requirement to harmonize and cooperate at the supranational level, and the sovereignty and security related interest of individual states seeking to keep control over their national airspace. This process is currently ongoing and final results are still pending. However, some progress was made and more progress is expected. A comprehensive package of regulations related to the Single European Sky has been adopted at EU level, achieving harmonization in several areas and with the potential to reduce fragmentation in

air traffic management. One critical element however, is the introduction of so-called *functional airspace blocks* (FABs). The idea of FABs is that they will encompass large blocks of airspace, which extend beyond national boundaries and are designed according to operational requirements in terms of their route and sector structure, thus accommodating for the transnational nature of civil aviation.[19] The notion of functional airspace blocks is derived from the air traffic management system of the United States of America which, because it is centrally managed and based on a standardized technical system, requires less than a third of the number of air traffic control centers for the upper airspace and is shown to handle around 70% more flights than its European counterpart (Eurocontrol/FAA 2009: 7). FABs could therefore be regarded as the core component of a future Single European Sky.

The establishment of functional airspace blocks requires an integrative process both at an organizational and political level, since the objective is to define airspace management and airway structures as well as common procedural and technical standards across multiple nation states. This obviously affects national sovereignty. Although the European Commission lacks top-down decision-making authority to implement functional airspace blocks, it has exploited a number of regulatory options in order to stimulate and support the development of FABs. This thesis analyzes the respective processes using the example of one of the current FAB initiatives, the *Functional Airspace Block Europe Central* (FABEC), which may be considered one of the most significant FAB projects in terms of traffic volumes handled within its airspace.

Research question

In light of above introductory remarks, the following research question shall be pursued in the present study:

'Is the European Union successful in its promotion of the establishment of functional airspace blocks within the policy area of air traffic management?'

[19] For a detailed description of the concept of 'functional airspace blocks' see Eurocontrol (2005).

Theories and hypotheses

This analysis focuses on theories of European integration which are to be applied in a very specific policy area: air traffic management. Numerous concepts have been developed by various scholars to explain the phenomenon of integration in the context of the European Union.[20] They approach the matter from different perspectives and sometimes even provide contradictory explanations. It is the intention of this study to capture the various forces that drive towards the implementation of a functional air traffic management system, reflected above all by the integrative efforts displayed by the European Commission; those forces potentially emerging as 'showstoppers' in the process e.g. as a result of nation-specific interests will also be addressed. By taking into account the dissenting variables affecting the issue, it will be possible to assess what type of influence dominates integration in this particular field, providing the opportunity to predict trends and optionally give advice on how to facilitate or promote a successful outcome.

The study reverts to two theories of political integration, which originate from two traditional streams with conflicting viewpoints regarding the factors that are supposed to be decisive for the progress of integration. One of the main points of contention is the role of nation states: Are states still in full control of respective developments, deciding by themselves to what extent cooperation and integration should take place? Or are supranational organizations increasingly taking the lead, gradually 'forcing' states into integration? On one side, the *liberal intergovernmentalist* account proposes a 'bottom-up' perspective, in which domestic societal actors determine the need for enhanced cooperation in a specific policy area. This is subsequently accommodated by national governments and taken to an international negotiation setting, where the level of integration is 'bargained' between states. Supranational organizations only play a minor role in this context; they merely serve as facilitators of negotiation processes. On the other side, *rationalist supranationalism* identifies increasing regulatory structures and 'path dependencies' at the supranational level that nation states are unable to escape from. Hence, integration is more and more governed by supranational organizations, leaving little room for unilateralist leanings of individual nation states. The hypotheses used to carry out the present analysis

[20] See, for instance, Kohler-Koch/Schmidberger (1996).

are derived from both theoretical strains and refer to the mentioned variables identified by the respective accounts.

State of research

There is little research available dealing with the current developments of air traffic management integration in the context of the European Union from a Political Science perspective. Most literature takes on either a legal/institutional[21] or technical/operational[22] viewpoint, or provides an overview of various facets and challenges of the process.[23] However, there are a few exceptions. Kassim/Stevens (2009) take a closer look at the European Union's endeavors to extend their scope of activity to policy areas hitherto reserved to nation states, namely aviation safety or air traffic control (*ibid*., 130ff.). They attribute to the Commission the ability to expand its regulatory competence and to displace previous intergovernmental structures when it comes to managing regional aviation issues (*ibid*., 151). The regulatory process of the EU is also considered to be more effective than traditional intergovernmental procedures, thereby incentivizing member states to seek regulation at EU level if necessary. However, the authors admit that even though the influence of the European Union in the area of ATM resulted in "member states no longer treating air traffic management as a purely national matter" (*ibid*., 240), and led to the development of certain supranational regimes, a full functional integration has not yet been achieved, albeit being a "clear prospect". Only very general explanations are provided as to the difficulties underlying this very particular policy area, referring to the operational character of ATM (*ibid*., 132) and the traditional persistency of nation states for strict national control in this domain (*ibid*., 2).

Ladenbauer (2005) offers a more in-depth analysis of integration processes in the field of air traffic management. He evaluates different phases in the history of European air traffic management as to their "integrative potential" (*ibid*., 13) in terms of functional drivers and national barriers, and compares them to the institutional and functional developments of Eurocontrol as well as to the first regulatory steps in the framework of the

[21] See, for instance, Schwenk/Schwenk (1998), Van Antwerpen (2008).

[22] See, for instance, Bianco et al. (2001).

[23] See, for instance, Calleja Crespo/de Leon (2011), Cook (2007).

Single European Sky. The study concludes that the increasing functional pressure towards integration stemming from growing air traffic control delays and the corresponding transnational lobbying activities by airspace users have eventually resulted in a respectable degree of harmonization within the European ATM system. However, no revolutionary steps were taken, mainly due to conflicting national interests and in particular to the institutional weakness of Eurocontrol, which was unable to enforce measures or standards on its member states. As the European Union has better institutional tools at hand to enforce policy decisions, the study credits the Single European Sky with a better chance of success, also taking into account the increasing complexity of the issue, which in any case may necessitate further cooperation, and a potential general advancement towards a pro-integrative mindset within the EU. Yet, the study still expresses reservations with regard to the evolution of national preferences in the domain of ATM integration (*ibid*., 102ff.). The present thesis is based on the previous study and intends to verify respective assumptions, taking a closer look at the very building blocks of a future integrated European airspace.

Ambitions and limitations of the study

The results of this study will shed a light on the validity of current integration theories when related to the specific policy area of air traffic management, and indicate whether the EU is able to overcome national obstacles to integration. They should demonstrate what instruments are used by the institutions of the European Union and foremost by the European Commission to expedite functionally necessary steps of integration in this specialized domain, despite potentially obstructive behavior by member states resulting from dissenting national preference structures. The intention is also to show to what extent national interests come about through a domestic preference formation process. Finally, the study gives insight into whether functional airspace blocks, as core elements of the Single European Sky, stand a chance of being accomplished successfully, and which factors would need to be addressed to support implementation.

It is important to note that the present analysis is based on a concrete FAB project composed of unique states with distinctive features. It will therefore be difficult to find generalized answers to the question of how to advance integration in European air traffic management. Moreover, the complexity of diverging interest structures and influences – also within FABEC – cannot be grasped in its entirety. Consequently, this study is neither able nor does it intend to offer a detailed 'recipe book', explaining the process in all facets and formulating a meticulous action plan to be followed. It is able, at best, to provide a general approach that may point in a possible direction.

Contents

Chapter 1 outlines the theoretical framework of the present study. It describes the two opposing theoretical strains chosen to determine the potential influencing factors on integration and enunciates the respective hypotheses, which form the basis for analysis.

Chapter 2 provides the contextual background for this study. It delineates and explains the history of endeavors made to promote integration in the domain of air traffic management from the very beginning, starting with Eurocontrol, the motor of harmonization and integration over four decades, and moving on to the Single European Sky, today's European Union-led large-scale ATM integration program.

Chapter 3 explores the case study undertaken here: the Functional Airspace Block Europe Central (FABEC). The FAB project in the core area of Europe is described from its initialization by feasibility study to the current status of institutional and functional integration.

Chapter 4 explains the methodological approach employed by the study to evaluate the hypotheses formulated in chapter 1. Theoretical concepts are operationalized, and the methods to acquire the respective indicators are specified. The chapter also identifies the relevant stakeholders involved in and/or affected by ATM integration in the context of FABEC.

In Chapter 5, the results from the collection of empirical data are presented. The respective findings are clarified per unit of analysis within the operational dimensions of each theoretical concept.

Finally, chapter 6 closes the research cycle by aggregating the empirical findings of this study. First, the underlying hypotheses are verified based on comparisons of the various units of analysis as required by respective theoretical conceptions, followed by a validity assessment of the selected accounts. This is complemented by an overall assessment of the current state of FABEC evolution and by an estimation of the inherent potential for further development. At the end of this chapter, a possible way forward is proposed.

1 THEORETICAL FRAMEWORK

Chapter introduction and summary

In order to determine the factors which may be influential to the process of integration in European air traffic management, a theoretical approach is indicated. As stated above, the implementation of FABs requires decisions on a political level, since in principle air traffic management is a sovereign task. Only after these decisions are taken can integration be pursued on an institutional and organizational level. Theories of political integration appear to be the most appropriate instruments to tackle the topic.

This chapter initially provides a definition of 'political integration': the extent to which nation states defer sovereign powers to a supranational organization in terms of decision-making authority and decision-making scope. Subsequently, the two theoretical concepts chosen for this analysis are described in detail: firstly, *liberal intergovernmentalism*, which suggests a 'bottom-up' evolution of integration controlled by powerful domestic interest groups affected by positive or negative externalities from (non-)coordination of policies; secondly, *rationalist supranationalism*, advocating a 'top down' approach initiated and continuously promoted by existing supranational organizations, in particular by the European Union, with its institutional and legal structures that member states find increasingly harder to escape. Factors identified by theory that could potentially influence the progress of integration are then explored and further specified. Finally, the hypotheses that constitute the analytical basis for this study are formulated and possible correlations between independent variables discussed.

Derived from the liberal-intergovernmentalist approach, the first hypothesis maintains that the relative influencing power of domestic societal actors determines national governments' preference intensities with regard to cooperation or integration in the policy area of air traffic management. Subsequently, as proposed by the second hypothesis, the respective government uses its relative bargaining power to reflect this position in international negotiations about the level of integration. The bargaining power of a nation state is

expected to be higher when the preference intensity in favor of integration is low. In contrast, the third hypothesis, based on rationalist-supranationalist accounts, suggests that the European Union – highly independent of influences from individual states – tends to increase the quality and density of supranational regulation to promote cooperation and integration in the field of ATM, even without having explicitly acquired additional competences to regulate that policy area.

1.1 Definition of 'political integration'

A basic definition of political integration is the "peaceful and voluntary conjunction of societies, states and national economies beyond former national, constitutional and economic boundaries" (Kohler-Koch/Schmidberger 1996: 152). The term not only implies an end result, but also describes the process by which that result is achieved. This process may encompass several consecutive steps, beginning with inter-state cooperation in specific functional areas, extending to international regimes, and eventually ending up with the implementation of federal institutions (Lehmkuhl 1997: 162). The institutional aspect enjoys particular relevance, as the establishment of institutions is an important consequence of integration and thus reflects the success of a respective project (Sweeny 1984: 25). Hence, the basic feature of political integration is the transfer of decision-making power from the states involved to a centralized body (Pentland 1973: 100), or alternatively the "pooling" of sovereignty at the supranational level (Mitrany 1970). The level of integration increases with the scope of binding decisions that a superior authority is legitimized to take on behalf of the participating nation states, thereby directly affecting their sovereignty. The scope of supranational decision-making authority (and hence of integration) is variable in three dimensions (Holzinger et al. 2005: 22; see also Laursen 2002): a) the vertical dimension, comprising the degree of decision-making power transferred to the supranational level; b) the sectoral dimension, implying the number of policy areas subject to supranational decision-making; and c) the horizontal dimension, comprising the geographical scope where supranational decisions take effect.

1.2 Theoretical approaches to political integration

Theoretical concepts attempting to explain the phenomenon of political integration have emerged along the unification process that took place in Western Europe after the end of World War II. Depending on the perspective, the greater purpose of political integration is either seen in securing political stability and peace (political view), or in increasing social and economic welfare (economic view). Consequently, while economists predominantly analyze the conditions and mechanisms leading to the integration of markets, political scientists focus on societal and institutional integration (Kohler-Koch/Schmidberger 1996: 153ff.). At this point, a decision is required as to which basic theoretical strain will be followed when dealing with integrative processes in the domain of air traffic management. The provision of air navigation services is linked to exercising authority over all or specific portions of the airspace, which is part of a nation state's territory and therefore rests under sovereign control of the respective government.[24] Hence, although today's often corporatized or even privatized air navigation service providers could in principle be considered as commercial actors, the sovereignty issues involved do not permit sole concentration on economic aspects. It is therefore appropriate to include a wider political perspective in the analysis of integration processes in this very specific domain. Therefore political theories of European integration will be made use of in the present study.

Although political theories of integration share the basic vision about the purpose of integration, their assumptions still differ in regard to the driving forces as well as to the achievable level of integration (Kohler-Koch/Schmidberger 1996: 155). Traditionally, two strains of political integration theories have opposed each other: *Intergovernmentalism* and *(Neo-)Functionalism* (Rosamond 2000: 131). Both perspectives act on different assumptions regarding the role of the nation state in international relations, leading to diverging assessments about the relevance of states in integrative processes.

[24] See, for instance, Kimminich/Hobe (2000): 83.

1.2.1 Intergovernmentalism

The realist view of international relations

The intergovernmentalist view originates from a realist perspective of international relations. According to realism, nation states are the primary actors within an international system that is inherently anarchic (Stein 1990: 4ff.). Since, on a global scale, no overarching central authority exists that could impose rules on the actions and interactions of nations, states enjoy full sovereignty and decision-making power. This in turn creates a competitive situation in which every nation state endeavors to sustain its position and strives for maximum autonomy (Gilpin 1981: 86). From this perspective, size, economic strength, and military power form the central focal points of national governments (see also Baumann et al. 1998: 7f.). Since mutual trust is hard to establish whilst in a permanent state of competition, international cooperation tends to be difficult (Smith 2000: 35). Realists consider cooperation to be feasible only if nation states perceive it as beneficial. According to Hoffmann (1981), nation states can only profit from cooperation in the realm of "low politics", which comprise economic and social issues. As soon as foreign and security policies or other power related issue areas are concerned ("high politics"), states are faced with a zero-sum game, since the gain in power of one state automatically leads to the reduction of power in another. Hoffmann believes that in these areas a common pursuit of interests is hardly possible. For realists, international cooperation thus is extraordinary, unstable, and only of a temporary nature (Stein 1990: 7). If cooperation does materialize, it will normally be pursued in the framework of international regimes or through international organizations. International regimes are "sets of implicit or explicit principles, norms, rules, and decision-making procedures, around which actor expectations converge" (Keohane 1989: 147). Unlike international organizations, which possess executive bodies, regimes are not capable of acting by themselves (Keohane 1999: 290f.); they simply provide a set of norms, which regime participants are supposed to adhere to. Irrespective of whether policy coordination takes place within a regime or an organization, no surrender of state sovereignty is generally involved (McCormick 1999: 3). In the realist view the decision about whether to engage in cooperative activities, and to what extent, is entirely up

to the states. Despite their basic ability to act autonomously, international organizations are considered to be merely "instruments" of nation states, serving as cooperation enablers by accommodating the exchange of information and by ensuring compliance monitoring as well as the correct distribution of goods – in short, by reducing transaction costs (Efinger et al. 1990: 270). Consequently, they do not develop any political autonomy, but remain under full control of their member states.

Consequences for intergovernmentalism

The intergovernmentalist perception of integration takes up these realist propositions and considers them to be applicable to integration processes. In this view, integration is the result of decisions and actions of national governments based on their own political will (Rosamond 2000: 131). There is an underlying assumption of rational state behavior: governments evaluate alternative courses of action in order to maximize their individual utility (Moravcsik 1993: 481). States are therefore considered to be the single drivers of integration, only pushing for further integrative steps as long as their national preferences are provided for.

The main reason for states to engage in cooperation and integration is their inability to successfully cope with transnational phenomena on their own. Since the onset of globalization transnational dynamics have intensified (Messner 2000: 350ff.). Economic interdependencies, transnationally operating corporations, international migration, ecological hazards, and other global threats pose an enormous challenge to nation states. Since the sphere of regulatory activities is restricted to their national territory, states are unable to deal with such challenges in isolation. States are required to cooperate in order to achieve common solutions to problems and consequences associated with transnational interactions. According to Moravcsik (1998), and in agreement with realist views, the creation of international institutions (including the transfer of decision-making authority from the nation state to an inter- or supranational organization) serves the purpose of enabling and optimizing cooperation by facilitating the exchange of trustworthy information and by ensuring compliance monitoring and sanctioning, without the states losing control over the process.

1.2.2 Liberal intergovernmentalism

In contrast to the traditional realist strain of intergovernmentalism, which conceives nation states' preferences as emerging from mainly security and power considerations, Moravcsik's *liberal* intergovernmentalism (1993) is somewhat more differentiated and introduces a liberal-economic point of view. According to this, the national preference structure is not primarily the result of a state's geopolitical position within an international context of asymmetrical interdependencies, but is derived from a domestic preference formation process involving powerful (economic) interest groups in various policy sectors. Hence, Moravcsik uses a liberal theory of national preference formation.

Focus on group interests and influence

Liberal theories assume that societal groups with autonomous interests, e.g. corporations, political parties, associations, unions, but also influential individuals, are the most important actors in politics (Moravcsik 1993: 483ff.). They are considered to be the *principals* empowering or constraining the governmental *agents* by providing or withdrawing democratic support necessary to keep them in office. In democratic societies, the backing by political parties and interest groups is essential for state officials to be (re-)elected. National governments therefore aggregate the preferences articulated by such groups and strive to accommodate them, whether domestically or at the international level. Hence, national interests or goals are basically defined by pluralist groups in the framework of a democratic process. These interests or goals are subsequently brought to bear by governments in international negotiation settings if relevant in regard to foreign affairs.

The question arises, which societal groups tend to be most influential when it comes to shaping domestic or foreign policy? Generally speaking, very specific and clearly defined interests are more constraining for governmental actors than ambiguous or divided ones, since the latter provide governments with more leeway. Consequently, societal groups with highly specific interests may be considered to have a higher influence capability than those with diffuse interests. Claus Offe (1969) even states that only specific interests related to a certain societal or professional status can form the basis of an interest

group, as it is only such interests that provide sufficient motivation for members. Furthermore, as Mancur Olson (1992) points out, group size is relevant as well. Based on the principle of rational choice, group preferences mainly depend on the expected net benefits or losses stemming from new policies or policy changes. Hence, the smaller the group, the higher the expected gains or losses per capita. According to Olson, the mobilization potential, and thus the influence of a group, increases with gains or losses inflicted on the individual group member, thereby rendering smaller groups more influential. Offe (1969) adds "the ability to withstand conflict" as a relevant group feature when discussing influence power. This ability is high if a specific group possesses the capacity to interfere with, or even temporarily disrupt essential societal functions (like transportation, health care, and other relevant public sectors) by executing or credibly threatening collective industrial action. In summary, the following group features appear to affect influence in terms of domestic policymaking:

- The representation of specific and clearly defined interests, possibly related to a societal or professional status.
- A relatively small group size.
- The ability to critically interfere with essential societal functions.

Policy externalities and vulnerabilities as drivers of policy coordination

Since in the liberal-rationalist view, net costs and benefits determine whether a policy is supported or rejected by an interest group, this principle may also apply to policy coordination at the international or supranational level. Societal actors of one state may suffer or benefit from so called "international policy externalities" (Moravcsik 1993: 485). Such externalities exist when domestic policies of one nation create costs (negative policy externalities) or benefits (positive policy externalities) to societal groups in another nation. They are a consequence of trans-border interactions and flows. An example for a negative policy externality is the case where low environmental standards in one state lead to an inferior environmental situation in a neighboring state, thereby imposing costs to domestic actors in the latter. In case of negative externalities, there may be an incentive for policy coordination and therefore cooperation, in order to establish common standards at an inter- or supranational level. According to Moravcsik, such policy coordination serves *recipro-*

cal market liberalization and/or *policy harmonization*. In the first case, economic interdependencies are accommodated by lifting import and export restrictions. Policy harmonization, on the other hand, prevents states from undermining each others' regulatory effectiveness by divergent national policies, as would be the case in the previous environmental example. However, if a state is able to effectively counteract a negative externality through unilateral measures, an incentive for cooperation will hardly emerge. The same obviously applies in the case of a nation benefiting from positive externalities of others. Hence, the vulnerability of governments and societal actors to policy externalities may vary considerably.

This notion of vulnerability of nations and of their domestic societal groups in particular needs to be taken into account when analyzing drivers and barriers to cooperation and integration processes. If domestically relevant actors suffer from negative international policy externalities, they may be pushing for international policy coordination and even integration. Moravcsik argues that this is particularly the case if the expected net benefits of policy coordination for a specific actor are *certain*, *significant*, and *risky*. In other words: there is no doubt that policy coordination will create the expected benefits; the benefits are large in magnitude; and the risk that these benefits will not otherwise materialize is considered to be high. In this constellation, societal actors have a strong incentive to mobilize politically. Conversely, if the benefits of policy coordination are diffuse or insignificant, the motivation for political mobilization is low, leaving preference formation to the discretion of national governments. However, there might be cases where domestic groups are *dis*advantaged by policy coordination. Obviously, in this case, cooperation or even integration is likely to be opposed. The same criteria of certainty, significance and risk also apply here, but in respect of estimated costs or losses. Depending on the influencing power of societal actors, diverging group interests may ultimately result in the failure of international cooperation.

Moravcsik maintains that the distribution of costs and benefits, and thus political mobilization at the domestic level in favor of, or in opposition to cooperation and integration, varies in accordance with the policy area affected by externalities. Referring to the European Union framework, he differentiates three categories of policy areas, basing the differentiation on policy targets pursued within the respective area: a) the liberalization of

exchange of private goods and services, b) the provision of socio-economic collective goods, and c) the provision of non-economic collective goods (Moravcsik 1993: 488ff.). As the present study is focusing on the provision of air navigation services and air traffic management, definition is required as to the type of policy area concerned here.

As was indicated earlier, liberalization, in its broadest sense, has in recent years also reached the domain of air traffic management. Although control and oversight over a nation's airspace is in essence a sovereign function, some states have corporatized or even privatized air traffic management.[25] The respective tasks were delegated to specifically designated enterprises in order to increase managerial freedom and to provide them with a larger degree of budgetary independence from political processes. In most instances, however, national governments have retained strategic control over these entities. This is particularly true for air navigation service providers who are responsible for area control services, as well as for approach and aerodrome control services at major airports. Europe has not yet seen any cross-border liberalization in these domains, in the sense that an ANSP of one country would have entirely taken over air traffic management in another. Yet, a different situation is presented with regard to air navigation services at regional aerodromes. Initial cross-border activities have already materialized here; for example, the Austrian provider *Austro Control* is in charge of ANS at a number of German regional airports.[26] It is also evident that the Single European Sky initiative promotes a certain degree of liberalization, since increased competition between ANSPs is often believed to lead to better cost-efficiency and thus reduce ATM costs for airspace users.[27] At present it is hard to anticipate how far liberalization will advance, also taking into account the potential hazardous effects on the level of safety.[28] In any case, cross-border liberalization should not be seen as the original driver for EU policy-making in the area of air traffic management. More likely, negative policy externalities imposed on airspace users that were brought about by different standardization levels accross Europe made the European airlines push for a harmonized and integrated air traffic control system (Ladenbauer 2005).

[25] See CANSO (1999).

[26] See Austrocontrol (2008): 28.

[27] The separation between ATM regulation and service provision induced by the Single Sky legislation is one step in that direction (see sub-section 2.2.2).

[28] See Ladenbauer (2009): 35ff.

Cross-border liberalization has only emerged subsequently as a possible facilitator to attain specific objectives of an optimized ATM system. Hence, the primary policy objective in the area of air traffic management is not to liberalize, but to set common standards. Moreover, the provision of air navigation services is not a private domain. Although the direct beneficiaries of ANS are mainly air carriers operating under private law, it is the flying public and literally every person on the earth's surface who have a profound interest in a safe air transportation system. Air traffic control is responsible for the prevention of collisions between aircraft and of subsequent crashes on potentially inhabited areas on the ground. ATC thus plays a vital role in ensuring public safety. Furthermore, air traffic services are provided in a public sphere – the airspace; any airspace user is eligible to make use of these services. Consequently, air traffic management is essentially a public task. Nevertheless, air transport and to some extent even the provision of air navigation services are also a commercial activity, as air navigation service providers incur service charges from airspace users. Therefore, all policies pertaining to air traffic management aim at setting a regulatory framework, within which this publicly relevant activity is to be executed. For that reason, it seems appropriate to include air traffic management in Moravciks' second category of policy areas, relating to the *provision of socio-economic collective goods*. Respective policies intend to define a set of standards and regulations to ensure public protection from market distortions or unwanted consequences caused by economic activities. This implies two dimensions: On one hand, regulation of economic activities normally affects *private* (commercial) interests; on the other hand, there are potentially strong *public* demands involved as well, which may sometimes even be in conflict with the private interests. Both dimensions need to be taken into account when discussing the domestic mobilization potential in favor of, or against policy coordination initiatives in respective policy areas. As explained before, the purpose of coordinating public goods policies is to avoid the problem of different national standards undermining each other, which may create negative policy externalities to other nations and their domestic stakeholders. Advancement of such coordination depends on the vulnerability of (powerful) domestic actors and national governments to negative externalities, and on the nation's ability to counteract corresponding effects through unilateral policymaking and action. According to Moravcsik, vulnerability is particularly high for smaller states, due to the greater level of economic interdependence, or for nations exhibiting high regulatory standards (Moravcsik

1993: 492). Ultimately, the domestic interest groups are the principal factor in the states' decision of whether to engage in policy coordination. As private commercial interests are normally more specific and therefore easier to organize than general public interests, such as environmental or public protection (which are often of a more diffuse nature), international policy coordination will mostly accommodate *private* demands. Depending on their level of organization, groups representing *public* interests may also be influential, but to a lesser degree. Alternatively, if policy externalities are ambiguous in nature and do not create any particular societal pressure, governments may strive for policy coordination on their own initiative, in order to prevent domestic policy from being ineffective.

Inter-state negotiation process

If the domestic preference definition process described above puts forward a requirement for a cooperative approach to solve a negative externality problem in a specific policy area, this is subsequently brought to bear in inter-state negotiations conducted at government level (Moravcsik 1993: 497ff.). At this point, the relative power of nation states becomes the relevant factor with regard to the further progress of cooperation and integration. Liberal intergovernmentalism acts on the assumption that the European Union provides a near ideal framework for negotiation outcomes to be close to *pareto-optimum*. This is the situation where the negotiation outcome for one party cannot be further improved without making any other party worse off, implying high negotiation efficiency.[29] This notion of an ideal negotiation framework is derived from the following assessments of EU decision-making processes: first, cooperation and negotiations in the EU take place in a non-coercive environment, i.e. neither military nor economic sanctioning power is applied by member states to impose their interests upon others, as the (economic and societal) interdependency between states is generally very high. Second, the flow of information between member states is intense and almost exhaustive, providing states with the potential to recognize the preferences and opportunities of their foreign counterparts. Third, the EU provides the institutional and procedural setting for negotiations to be effected at relatively low cost. Consequently, relative power of states is not defined in military or economic terms, as realists would suggest. In fact, the relative intensity of national prefer-

[29] See, for instance, Fudenberg/Tirole (1983).

ences, as defined during domestic preference formation, becomes the critical element when determining power asymmetries between states. Generally speaking, the more a nation state (and its domestic actors) depends on international policy coordination, the weaker its relative position in the international bargaining process. A government strongly requiring an international policy solution will be willing to make more concessions during the international bargaining process in order to achieve this goal, whereas those for which non-agreement is a viable option are able to stick more rigidly to their individual interests, thereby finding themselves in a relatively strong negotiating position. The bargaining power of a nation state in international relations is determined through its capacity to either a) pursue unilateral policy alternatives, b) join alternative coalitions in favor of policy coordination, or c) find compromises and/or linkages between issue areas.

Negotiation theory utilizes the concept of 'BATNA' (Best Alternative to Negotiated Agreement) to describe a point in a negotiation process where the value of an agreement at hand is inferior to that of a unilateral action alternative.[30] The better the 'BATNA' of a nation state involved in international negotiations, the greater its bargaining leverage, as the desire for a cooperative approach is less intense. A high 'BATNA' means low vulnerability of a nation and its society to negative policy externalities and/or high satisfaction with the status quo. According to Moravcsik, this situation mainly applies to "large, prosperous and relatively self-sufficient countries" (Moravcsik 1993: 500). However, in today's globalized context, a certain degree of (often asymmetrical) interdependency and therefore vulnerability still exists, leaving even very autonomous governments with a certain interest in policy coordination. Nevertheless, the continuous 'threat of non-agreement' by such states helps them to see their preferred policy solution accommodated in inter-state bargaining, whereas those nations eagerly striving for a cooperative agreement will still benefit, while considerably compromising on their side. This also implies that the government least willing to compromise is able to set the standard of an eventual international agreement (particularly if decisions are taken unanimously) resulting in policies based on the lowest common denominator. It must however be emphasized that this lowest common denominator does not automatically correspond to the interests of self-sufficient states only, or to a lowest possible policy standard. As mentioned, these states often prefer

[30] See, for instance, Fisher et al. (1991): 143.

agreement over veto and are therefore willing to make a few concessions. This is particularly the case if higher regulatory standards in one issue area facilitate activities and interactions in others.

A second determinant of bargaining power in international negotiations is the possibility of states to join alternative coalitions that ensure policy coordination. Its principle is based on the 'threat of exclusion', where countries unwilling to cooperate are left out of consideration, and policies are agreed between those states looking for international solutions. To be excluded from a coordinated agreement may impose negative policy externalities, building pressure toward a more cooperative behavior and eventually leading to geographical expansion of a cooperation or integration area. Negative externalities, however, are not a necessary implication of an alternative coalition. A state excluded from a coordinated policy may even benefit from positive externalities, creating an incentive for this particular state to free-ride without having to participate in the costs of policy coordination. In such cases, the geographical scope of integration will not be increased.

A third determinant of negotiation outcomes is the potential for compromises, side payments and linkages between issue areas. Final negotiation results often depend on the intensity of preferences at the margin of a feasible set of agreements. If marginal gains or losses are less important to a negotiating party, it will be more able to compromise. In this case, the preferences of a counterpart eagerly looking for gains at the margin can be accommodated. Different preference intensities may also arise across various issues; a party may look for marginal gains in one particular issue area, which is not as valuable to the other party, while the situation is converse in a different issue area. By 'linking' these two issues in a package deal, there is potential benefit to both parties when compromising on their low preference issue in exchange for concessions in the respective issue area of higher individual preference intensity. In international negotiation settings, such bargaining solutions are possible mainly between states with highly asymmetrical interests in diverse issues. However, package deals of this sort may also generate domestic opposition, since concessions in one specific issue area, albeit of no great relevance, might leave certain actors disadvantaged. The intensity of such opposition may have a blocking effect on potential issue linkages, even more so considering that losers tend to be willing and able to put considerable pressure on governments. Hence, the negotiation strategy of linking dif-

ferent issue areas could be complex and risky. Success of issue linkage will be most likely if domestic preferences are of low intensity in regard to the area where concessions are supposed to be made. Whenever possible, financial or even just symbolic side-payments will be effected to compensate for gains in a particular issue area. The use of issue linkage strategies is predominantly expected in the final stages of a negotiation process, when it comes to balancing marginal gains and losses, as opposed to applying them to the 'big' deals. The issues linked will be closely related to each other rather than completely separate, in order to allow for intra-sector compensation of potential losses. Alternatively, if losses to domestic actors remain significant, governments may be required to pay compensation to disadvantaged groups in order to enable the linkage. Ultimately, as far as political integration is concerned, issue linkages are costly and therefore only a second-best option to achieve this objective.

The role of supranational organizations

As previously noted, the liberal-intergovernmentalist view regards supranational organizations mainly as facilitators of inter-state negotiation processes. They increase negotiation efficiency by providing a common negotiation forum as well as transparent decision-making procedures and by ensuring monitoring as well as compliance of negotiation outcomes.[31] However, the institutional setup of the European Union is unique insofar as EU institutions do not only play the passive role of a facilitator; on the contrary, national sovereignties are pooled at the supranational level in the framework of a qualified majority voting system.[32] In addition, certain sovereign powers are even delegated to central institutions. A partial explanation for this relinquishment of national sovereignty may be the inability of a unanimity based, ad-hoc negotiation framework to deal with unexpected contingencies at short notice (Garrett and Weingast 1991). Considering this motivation insufficient to explain the variations in sovereignty pooling and delegation, Moravcsik proposes that a cost-benefit analysis underlies the decision for transfer of sovereignty and that national governments put greater value on the benefits of high efficiency decision-making in specific areas, as opposed to the risks involved in a certain non-controllability of re-

[31] See also Levy et al. (1992).

[32] See sub-section 5.2.1.

spective decision outcomes. However, for this cost-benefit analysis to be in favor of sovereignty delegation and/or pooling, three conditions need to be fulfilled (Moravcsik 1993: 510f.): 1) States must potentially benefit from cooperation and more rapid decision-making at the supranational level; the greater the expected gains from increased cooperation, the higher the willingness of national governments to transfer sovereignty. 2) Future decisions must be uncertain in terms of form, details, and outcome; the more precise the available knowledge is about downstream decisions, the higher the potential for political mobilization at the national level, thereby the pursuit of specific national interests is promoted in the less precarious setting of ad-hoc unanimity decision-making. 3) The political risks for national governments and domestic interest groups with high preference intensities must be low; if the danger exists that an unwanted delegated or pooled decision will lead to significant losses for an individual nation state and/or major domestic groups in a specific issue area, transfer of sovereignty will not be effected.

Supranational organizations not only serve as negotiation enablers and efficient decision-making bodies, they also help national governments to strengthen their autonomy against domestic pressure groups. In this "two-level game" (Putnam 1988), domestic opposition can be overcome more successfully if national governmental policy initiatives are linked to political processes and/or outcomes in the framework of the European Union. This increases political legitimacy of respective initiatives as well as domestic agenda setting power. The latter is supported by the institutional structure of the EU, with its dense flow of information not generally available within the national setting and the possibility of taking binding 'black box' decisions secluded from public influence. Agreements found in the supranational frame are presented at the national level as package deals which cannot be untied, leaving domestic political actors with a 'yes' or 'no' choice only, without any opportunity for amendment. Such advantages to national leaders provide an additional incentive for them to engage in policy coordination at EU level.

Summary

To summarize the liberal-intergovernmentalist account, the requirement for policy coordination on the international level mainly arises from negative policy externalities affecting powerful domestic pressure groups with specific and easily organizable interests. This requirement is subsequently taken by national governments to the inter- or supranational ne-

gotiation scene, where the relative national preference intensities determine the final outcome of an eventual agreement. Generally speaking, the higher the preference intensity, the weaker the bargaining position of a state. Supranational institutions assist the negotiation process by reducing transaction costs and by providing national leaders with a pressure element to overcome domestic opposition.

1.2.3 Supranationalism

A theoretical strain that provides a somewhat different perspective of integrative processes compared to intergovernmentalism is *supranationalism*. Supranationalist theories are rooted in an earlier theoretical approach – (neo-)functionalism – which mainly opposed realist and traditional intergovernmentalist accounts. In order to fully understand the concept of supranationalism, the predecessor concepts will be explored first.

(Neo-)Functionalism

David Mitrany (1943) initially proposed a functionalist theory of integration. He maintained that there exists a clear separation between a functional, welfare-oriented sphere and a political, power-oriented sphere. As different nation states and societies are confronted with similar problems and often pursue concurrent objectives, particularly on technical issues, there is a common interest of states to find common solutions to such problems. It may be expected that this will result in functional cooperation, since, according to Mitrany, “true welfare can only be achieved beyond national boundaries” (*ibid*.). In contrast to its political counterpart, the functional sphere is devoid of power considerations, as this sort of practical cooperation is equally beneficial to everyone. Consequently, no redistribution of wealth and therefore no political authority are required. Thus the relevant actors are the technical experts and those international organizations serving as platforms to enable functional cooperation. Through expansion and deepening of this uncontroversial collaboration, positive effects promote a learning process, finally leading to a “global community” where technical organizations at the international level turn into focal points and eventually become structures of global governance. Criticisms on Mitrany’s functionalism are aimed at its strict distinction between welfare and politics and its assumption of an automatic expansion of functional cooperation. Harrison (1974: 32ff.)

points to the fact that the allocation of welfare related resources always occurs within a political framework. Moreover, technical cooperation is often a result of preceding political decisions. Politics and welfare are thus not separable. Hence, there is a certain state influence on integration which cannot be neglected. This implies that the need for cooperation is not automatically transferable from one issue area to another and that integrative processes are not of the universal nature that functionalism presumes.

After critically reviewing Mitrany's assumptions, Ernst Haas (1964) reformulated the functionalist approach into *neo-functionalism*. In view of the comprehension that a clear separation between politics and welfare is not practicable and that welfare should in fact be regarded as the overarching objective of politics, the question arises, whose welfare is in the spotlight of political activities? According to Haas – and similar to liberal-intergovernmentalist accounts – interest groups play a determining role in this respect. In his view, political parties and other interest associations aggregate and consolidate public needs and interests; they feed the political decision-making process, which in turn provides those actors with considerable influence power.[33] It is these political 'elites' who also have the say when it comes to initiating integration processes. Integrative activities may only be expected if they conform to the interests of relevant political actors. As opposed to Mitrany's functionalism, there is no general 'welfare orientation' gradually leading to comprehensive integration in all available policy areas. Integration is initially restricted to those domains where the political elites of several nation states simultaneously perceive additional benefits by increased cooperation. Such common perception of benefits requires a homogenous level of basic values in different countries. Consequently, political integration will more easily be realizable in the narrower regional context (e.g. within Europe) than on a global scale. If integration is successful in one policy area, it will promote further integration in others, until a point is reached where more politically sensitive domains are affected, which originally may not have been subjected to integration due to conflictive state interests. This dynamic is known as 'spill-over'. Three types of spill-over processes are distinguished (Holzinger et al. 2005: 34ff.): If integration in one sector alone is unable to provide sufficient benefits, or even has negative impacts on another area, this may create a demand for additional integration in a neighboring policy domain.

[33] See also Linder (1999): 120f.

This is referred to as *functional* spill-over,[34] which in essence corresponds to the intergovernmentalist view of integration as a reaction to negative policy externalities. *Political* spill-over involves a "shift of loyalties" to supranational institutions (Mutimer 1994: 32). The underlying assumption is that domestic political groups gradually see their interests and goals provided for more substantially through supranational policy solutions than in the national context. Thus they begin realigning their expectations and political activities to the supranational level by building transnational coalitions and formulating supranational policy objectives. This accelerates the process of integration in various domains. Finally, integrative activities of international or supranational organizations may lead to *institutional* spill-over. If the political will exists to pursue integration in specific policy areas, then international organizations are created, by which cooperation in the respective issue area is institutionalized. They constitute a first step towards integration. In order to be able to carry out their assigned functions, international organizations form administrative structures which develop discrete identities and values, build up expertise, and, in principle, are able to act autonomously, even if restricted by the framework of their assignment. Haas therefore concludes that a certain dynamic and institutional momentum will eventually emerge from these organizations. This assumption is derived from a systemic viewpoint: International organizations are seen as systems that are fed with policy requests and generate output in terms of collective policy decisions. Respective output may also have (unintended) side effects on the environment of the system, such as promoting the realization of political elites that their interests are better accommodated through international cooperation. In the course of this learning process, input patterns are adapted by assigning additional tasks to the international organization, or even by increasing its decision-making authority. Furthermore, the expanding expertise and autonomy of an international organization, which over time develops its own values and policy objectives, may be able to eventually initiate such a transformation process on its own. This could particularly be the case if the organization's values and objectives are compatible with the basic interests of external actors, show sufficient flexibility, and are strongly represented as well as propagated by the employees and the leaders of the organization.

[34] See also Lindberg/Scheingold (1970): 117.

Rationalist supranationalism

The *rationalist-supranationalist* concept of Stone Sweet and Sandholtz (1997) draws greatly from the neo-functionalist accounts. They find themselves in agreement with Haas' basic postulation that transnational coalitions of political elites and interest groups are the driving forces of integration. This is also deduced from Karl Deutsch (1953) who argues that transnational social exchange among individuals over a prolonged period of time will eventually lead to the creation of new communities beyond national borders. In addition, Stone Sweet and Sandholtz share and further develop the idea of the logic of institutionalization at the supranational level, a process whereby supranational bodies become the new locus of politics, channeling and forming subsequent decisions. However, rationalist supranationalism is distinct in the way that it does not categorically exclude intergovernmentally driven processes of integration. On the contrary, Stone Sweet and Sandholtz admit that especially the "grand bargains" leading to Community treaties, for example, are by nature intergovernmental (Stone Sweet/Sandholtz 1997: 307). They also maintain that the modes of governance within the European Union vary between policy areas. While intergovernmental politics are found in some domains, others are governed by supranational politics. They do not share the notion implied by neo-functionalist theories that the European Union is gradually replacing the nation state in all its functions. Spill-over is taking place, but not automatically and not into all issue areas. Rationalist supranationalism tries to provide an explanation for the differences in governance between policy sectors, as well as for the transition from an intergovernmental to a supranational mode of governance. According to Stone Sweet and Sandholtz, the movement from intergovernmental to supranational governance in the framework of the European Union, and thus the level of integration, is measurable in three dimensions which are interrelated: 1) transnational society; 2) EU institutions; and 3) EU rules (Stone Sweet/Sandholtz 1997: 304). In the rationalist-supranationalist account, transnational society is the starting point of integration. A large number of non-state actors transact and communicate beyond and across national boundaries. In order to be able to keep their cross-border transactions at low costs,[35] these actors require internationally coordinated standards and rules. They will turn to their national executives, but also directly to existing supranational organizations

[35] See the concept of negative policy externalities described in the previous sub-section.

in order to have their demands fulfilled. With increasing transnational exchange, more and more supranational rules will eventually emerge. This is expected to happen despite the more closed-in interests of national governments, since the latter are unable to indefinitely deny their domestic transnational actors the benefits of supranational regulation. Governments therefore take on a reactive rather than proactive role when it comes to integration, gradually accepting and effecting transfer of additional competences to the supranational level. The increase in supranational standards and rules will in turn facilitate further transnational interactions, rendering those interactions increasingly dense and elaborate, which may create further needs for policy coordination. The varying demands of societal actors also explain the differences in the level of integration across policy domains. In those areas where intensity and value of cross-border transactions are relatively low, the need for supranational regulation will be correspondingly low; in these sectors, a more intergovernmental mode of governance may be expected. Consequently, in sectors with a high level of transnational interactions, governance tends to move towards the supranational pole (*ibid*., 308).

In order to be able to produce, execute and enforce supranational regulation, institutions have to be created and given respective competence to fulfill their functions. The European Union principal institutions consist of the European Parliament; the European Council, composed of the heads of state or government of member states; the Council, composed of the relevant national ministers; the European Commission; the Court of Justice of the EU; and the European Central Bank.[36] On one hand, these bodies facilitate the intergovernmental bargaining process, which is their main purpose from an intergovernmentalist perspective. On the other hand, and in accordance with neo-functionalist accounts, they increasingly become autonomous actors. Stone Sweet and Sandholtz define autonomy as "an organization's capacity to define and pursue, on an ongoing basis, a politically relevant agenda" (1997: 304). EU organizations make extensive use of the competences transferred to them and regularly come up with policy initiatives on their own, often aiming at reinforcing and further promoting integration. The degree of autonomy of such organizations forms the second dimension to measure supranational governance. This capacity is expected to grow with the addition of policy domains to be regulated at

[36] According to article 13 (1) TFEU.

the supranational level and with greater density of European Union regulation, since it enlarges the scope of action of supranational organizations. Moreover, the greater their scope and influence, the more they become focal points for political demands from national and transnational societal actors, while increasingly leaving the nation state on the sideline of political activities.

The number and density of supranational rules is recognized as the third indicator for the shift towards supranational governance. As described above, they are the result of growing transnational interactions. At the supranational end, rules not only become more formalized, specific, and comprehensive, but also increasingly enforceable, even against the will of individual nation states. Furthermore, for rationalist-supranationalists, it is not only the legally binding rules that must be considered, but also less formal constraints such as procedures, roles, or expected behaviors that are applicable in the supranational decision-making framework. All these formal and informal rules provide the context within which social interactions take place and political decisions are taken. Consequently, they set boundaries to those acting within that framework. On one hand, actors adapt to these boundaries by recognizing and exploiting the room for maneuver and by avoiding possible restrictions they may encounter based on their interests. On the other hand, actors attempt to expand those limits either by seeking new regulation or by demanding increased clarity of the rules through legal interpretation. To that effect, they turn to the respective supranational body, be it the legislator, the administration, or court. Both the issuance of new legislation and the interpretation of existing rules are creative processes leading to a new or adapted set of rules and consequently to a revised context, which serves as the new basis for further political and social interaction. This dynamic is referred to as *institutionalization* (Stone Sweet/Sandholtz 1997: 310ff.), implying that the institutions – defined as systems of rules – are in constant development and evolution. The point of rationalist supranationalism is that this phenomenon is virtually unpredictable and therefore outside the area of influence of nation states. Once institutionalized, rules are also very difficult to reverse, even if disliked, as decision-making procedures such as qualified majority or even unanimity voting provide considerable obstacles to a change of policy.[37] Moreover, in the view of increasing costs of isolation, exit is no longer an option

[37] See also Scharpf (1985).

for nation states, even if they are unsatisfied with specific regulations. In this perspective, states are not in full control of rulemaking and subsequent integration at all times, as intergovernmentalism would suggest. It also becomes apparent that the three dimensions – transnational exchange, organizations, and rules – are positively interconnected. Albeit the integration process is seen to be initialized by increased transnational interactions, change in either dimension will result in corresponding shifts in the other two as the emerging effects are mutually reinforcing. In this way, integration is growing due to its own dynamics; the nation states become reactive spectators rather than the drivers of the process.

1.2.4 Conclusion of theoretical considerations

In sum, both intergovernmentalism and rationalist supranationalism consider domestic interest groups and other societal actors to be the determining factor in whether integrative processes will be initiated in the first place. However, intergovernmentalists perceive this domestic pressure as mainly being imposed on national governments, which subsequently enter international negotiations about further cooperation and integration. Rationalist-supranationalists on the other hand, focus on the activities of transnational coalitions who not only try to influence nation state officials, but also put forward their demands to existing supranational organizations. Intergovernmentalism does not concede a large extent of political autonomy to supranational organizations. Despite their ability to take binding decisions in specific issue areas, intergovernmentalists maintain that such decisions are not of high importance, as the delegation of powers to supranational authorities will only be effected if no significant risks are posed to national governments. In contrast, rationalist supranationalism identifies an amplifying dynamic emerging after the first steps of integration have taken place. The elevated density of supranational rules encourages increased transnational activity, furthering demand for even more supranational rules. Rules also produce ‘path dependencies’ (Pierson 1993/1996), shaping the context for social and political interactions and moving progressively outside the national framework. Supranational organizations gradually become more competent and evolve into autonomous actors, which further promote integration by submitting policy initiatives or by (re-) interpreting existing regulation.

1.3 Conceptualization of factors affecting integrative processes

Any study of integration processes in a specific policy domain should take into account as many relevant explanatory variables as possible in order to be able to maximize the understanding of the dynamics involved. For the analysis, it therefore seems advisable to deduce hypotheses from both theoretical strains discussed so far, since they offer a contrasting perspective on the driving forces of international policy coordination and integration. Moreover, the requirement to include more than one theory when investigating policy-making within the European Union is also supported by several authors, as unicausal theories are considered unable to provide sufficient explanation (Cornett and Caporaso 1992; Pentland 1973: 189ff.; Puchala 1972). In doing so, it may also be possible to assess the validity of respective theories in the specific context of air traffic management.

1.3.1 Basic determinants of integration: Domestic and transnational interest groups

Since domestic interest groups (whether acting nationally or transnationally) are considered in both theoretical views to be the basic determinants of any political action in pluralistic societies, it seems advisable to bring them into focus first. Literature generally fails to provide an agreed definition of the term ‘interest group’ (McCormick 1993: 132). Broadly speaking, they can be considered as “organizations with an explicit or implicit objective to permanently, temporarily, or in singular cases, impact societal decisions” (Vieler 1986: 2). Interest groups may encompass a large number of different types of organizations, including professional and economic associations, consumer and environmental protection groups, political parties, labor unions, business corporations, media, and other organized groups of individuals trying to promote specific interests or opinions. Even governmental agencies as well as supranational organizations could be regarded as such when furthering interests independent of any ‘official’ position. Therefore there is a vast variety of potential influence on political processes. Whether a particular societal group will engage in political activities in a policy domain highly depends on its perception of a specific problem

possibly requiring regulatory action. Rochefort and Cobb (1993) maintain that the problem definition of an issue and the corresponding political attention correlate with the existence of a number of impartial as well as subjective criteria: the severity of the effects of a problem, the complexity of causal factors, and the availability of resolution strategies to that problem. As explained above, an issue becomes particularly salient if it directly and strongly affects relevant societal actors. This is mainly the case for interest groups that are very closely related to a specific policy domain and all the issues associated with it. The decisive factors in terms of whether a societal group shows high potential for having an impact on political processes have already been identified.[38] They include: a) the representation of specific and clearly defined interests, possibly linked to a professional or societal status; b) a relatively small group size; c) the ability to interfere with vital public functions. Consequently, the combination of an intense problem perception together with those group features that tend to enhance influencing power may be expected to increase the likelihood of successful political influence.

Dimensions of influencing power

In order to be able to identify whether a particular societal group should be attributed a high influencing potential, the favoring conditions have to be further differentiated. The specificity of interests – a first important condition – may be regarded as high if the members of the respective group are homogenously affected by an issue in terms of economic gains or losses, or of changes in social status and recognition. This being the case, the resulting way forward to secure or improve benefits and/or status will normally be unambiguous and agreed upon by a large majority of group members. Clear and broadly supported positions are easier to communicate and can be more decisively represented to the outside world. Offe's assumption that interests associated with a specific professional or societal status are relatively powerful becomes evident here. Professional associations, unions, and business enterprises are groups that will most likely be able to articulate highly specific interests and positions. The greater the variety of interests or opinions within a group in regard to the problem definition and desirable objectives (as is often the case in

[38] See sub-section 1.2.2.

conjunction with environmental or consumer protection), the more difficult it is to come up with an unequivocal position, which renders influencing efforts less effective.

Mancur Olson's reference to group size as an important factor to determine influence power is largely related to the 'problem severity' issue described by Rochefort and Cobb. To recap, Olson argues that in relatively small groups the per-capita gains or losses associated to policy change are higher, because they are distributed amongst fewer individuals. Therefore he grants greater power to smaller more specialized groups to control or adjust policy outcomes. The underlying idea is that the more an individual member is concerned by a benefit or loss, the more intensely he or she will assist in promoting the group interest, with less opportunity to free-ride on the efforts of others. This assumption may be correct, however, it is problematic to draw the conclusion that a reduced group size automatically generates more influence. It is also conceivable that a larger group of individuals exhibiting uniform interests and elevated personal concern may provide a better basis for political activity. Hence, the main criteria to concentrate on is the degree by which individuals of a societal group – and ultimately the group as a whole – are affected by policy change in terms of certainty, significance, and risk,[39] be it in a positive or negative way. Moreover, the possibility exists for group leaders to convey their own levels of concern to the rest of the members, especially if group individuals are only indirectly affected, or where their situational awareness about their own anxieties is low as may be the case if they play only a minor role within a larger organization. The more that political action or inaction touches the interests of group members and/or their leaders, the more dynamically they will mobilize and push for their preferred policy solution. Corresponding efforts can take on various sorts of activities, dependent on the opportunities of a societal group. In democratic pluralistic societies, classical forms of interest promotion comprise direct lobbying with political decision-makers and/or governmental authorities, and/or the application of indirect pressure by influencing public opinion through media channels or public manifestations.[40] Often, 'framing strategies' are used to transfer the interest group's perspective of a problem and its solutions to the outside world (Keck/Sikkink 1998: 18ff., McAdam 1994). By framing an issue, it will be presented in a way allowing others to per-

[39] See sub-section 1.2.2.

[40] Gordenker and Weiss (1995: 382) refer to "tactical modes" applied by Nongovernmental Organizations to reach specific policy objectives.

ceive and evaluate it in an identical manner (Dombrowski 1997: 150f.), thus advancing understanding and support for the matter. Furthermore, the conduct of legal proceedings at different levels of jurisprudence may also provide an option to change or re-interpret policy decisions. In direct-democratic societies such as Switzerland, even policy initiatives can be launched and, if successful, submitted to the public vote. All these efforts require high motivation, organizational skills, financial investments, and access to political decision-makers; they will only be made if societal actors consider them worthwhile and likely to accommodate their individual interest structure.

The third dimension of influence power is the ability of a group to temporarily disrupt vital societal functions, or to credibly threaten such interference. This mainly refers to industrial action by associations or unions representing those professionals who exercise essential tasks in society. Such vital areas primarily include functions of public good provision, such as health care and emergency services (e.g. police, hospitals, rescue services, or doctors), transportation (aviation, railway, and other public transport systems), energy and water supply, or waste disposal services. In order for any societal interference to be effective, the substitution of such services by alternate means or other service providers must either be impossible, or not available in time. In the domain of public services, this may regularly be the case as often only a single official agency or designated service contractor is assigned the respective duty in a certain geographical area and/or on behalf of a specific population. In addition, in order to be able to generate adequate public pressure to resume service provision, a large number of people must be affected by the service interruption.

Although a particular group may functionally be able to sustain a disruptive effect on society, a number of pre-conditions must be fulfilled in order for that group to actually revert to this sort of action. First, groups may be bound by contractual or other legal agreements to refrain from such action, or have to undergo certain procedures such as mediation or arbitration before they are allowed to proceed with collective measures. Such legal constraints must initially be overcome. Second, a very large majority of the group members must be supportive of and prepared to actively engage in respective activities. This is often associated with a highly psychological momentum, especially when group individuals fear subsequent repression or even dismissal from their professional function.

Consequently, personal motivation must be extraordinarily high, which can be the case if individuals are very negatively affected by policy externalities. It is even conceivable that a group could be in such a strong position that group members do not perceive any risk of disadvantageous repercussions. This is to be expected in organizations or groups carrying out highly skilled tasks of a monopolistic nature, where substitution is almost impossible, neither in terms of the individual, nor the organizational level. In these instances, obstacles to industrial action may be lower. In any case, one may assume that personal dismay of individual group members over a specific situation is an important factor when encouraging willingness to resort to more aggressive means. Given the risks usually involved in undertakings of this kind, general welfare considerations will rarely be sufficient to deliver the necessary motivational basis. The group concerned must possess adequate organizational skills to arrange disruptive activities. Public tasks are often of a complex nature involving a large number of people in various functions, locations, and decision-making positions. Interference with operations therefore requires a high degree of coordination and a dense flow of information, as well as a close relationship and mutual trust between the organizers and the activists at the front-end.

Even though pressure emanating from public service interruptions may result in an aspiration to accommodate the demands of the group responsible for such actions, there is always the risk of counterproductive effects. Since the original intention of the group is to have a determining influence on a specific policy outcome, public opinion and the opinion of political elites are of paramount importance to achieve this. If demands made by a group are considered to be excessive and beyond reason, group actions might be perceived as ‘blackmailing’, and thus, instead of respecting the group’s policy requests, all efforts will be directed at substituting disruptive individuals or the entire service provider. A careful appreciation of the situation is therefore required in order to make sure that goals and means remain aligned. In conclusion, a group’s capacity to interfere with vital functional areas of society depends on numerous factors that do not automatically apply to every possible organization.

Asymmetries of influencing power

To determine expected relative influencing power, one needs to examine structure, organization, motivation and objectives of a group. In order to do that, a priority order of the

relevant dimensions of influencing capability (which were just explained) is required. One would tend to assume that the ability to interfere with vital societal functions could be the most important factor affecting influence. As was shown above though, this capacity cannot be put to use if distinct policy solutions fail to be developed, adequate individual motivation is missing, or group objectives are not intelligible to the public. Personal concernment, and thus motivation of individual group members, is also insufficient if the group's interests are of a highly heterogeneous nature, as group dynamics will be dissipated towards multiple, sometimes even conflicting objectives. Yet, even a highly homogenous interest structure as well as the ability to formulate policy goals are of no use if the organization lacks the required organizational preconditions to convey the message to the public or to relevant decision-makers.

Consequently, it is fair to presume that organizational capabilities, such as an effective management structure, the ability to establish and make use of political networks, as well as financial strength are the primary requirements to grant an organization influencing potential. If these conditions are fulfilled, it depends on the levels of concern and the incentive of individual group members, or the group leaders, as to whether political activities are considered necessary; the higher the motivation to act, the greater the probability that respective efforts are put into practice and recognized by political decision-makers. At this point, the availability of specific policy alternatives comes into play. Policy proposals have to be clearly focused in content and must be capable of finding general acceptance by the public. If one subsequent form of action chosen to bring the message across is associated with disruptive interference in certain areas of society, the amount of pressure created may be crucial in deciding whether a group's preferred policy solution will be implemented. However, for this option to be effective, the necessary legal basis and – depending on the degree of personal concernment – an enormous group motivation must be available. If this is the case, the next relevant success factor to be considered is whether the substitutability of a group or organization is low or high, as this determines the extent to which disruptive activities can potentially impact on the targeted sphere of society. Finally, the expected intensity and magnitude of societal implications need to be taken into account. Any other order of priority would be impractical, since the listed elements only take effect if the superior conditions are fulfilled. There is little purpose in attempting to differentiate impact severity between various types of service interruption. In principle, all

public service functions are of relevance to society, and a lack of service provision will be noticed eventually in any case. Obviously implications in some areas are more immediate and more visible than in others, thereby drawing faster and greater public or media attention. This is particularly the case in the aviation sector, where service disruptions leave thousands of passengers stranded at airports within a very short period of time.

Relative influencing power comes into play when several groups with competing interests strive to have their individual policy proposals prevail in the political decision-making process. According to the liberal-intergovernmentalist view, national governments will take policy decisions based on the aggregated interests stemming from domestic pressure groups. If the majority of powerful interest groups share a common vision on how to proceed politically, the corresponding policy solution will be easier to determine. However, if groups featuring similar power patterns display conflicting views and interests, matters become more complicated. One may expect that governments will try to compromise between extreme positions in an endeavor to accommodate the different requirements set by societal actors. As regards political integration, a compromise will presumably emerge by postulating close cooperation and integration in some areas, while keeping other domains subject to national decision-making. The following table summarizes the various dimensions of influencing power of domestic interest groups and includes the proposed order of priority in order to be able to determine relative power asymmetries:

Priority	**Dimensions**	**Sub-dimensions (in order of priority)**
1	Organizational capabilities	Level of organization
		Density of political (lobbying) network
		Financial strength
2	Degree of concernment of the group / group members	Operational, financial, status-related, and/or cultural concernment
3	Specificity and homogeneity of group interests	Availability of specific policy objectives and solutions
4	Ability to interfere with vital societal functions	Legal basis
		Substitutability of group tasks
		Magnitude of implications

Table 2: Dimensions of ‘influencing power of societal actors’

The transnational sphere

Having focused above on *domestic* interest groups, the same criteria for influencing power may basically be expected to apply when relating to *transnational* interest actors and advocacy networks.[41] Certain differences do exist, particularly with regard to the ability of transnational groups to interfere with vital societal functions. On one hand, implications of coordinated industrial actions across different countries would be excessive and therefore could have a very high potential for impact on the relative advantage of the respective interest groups. On the other hand, the legal basis for engaging in such activities differs from nation to nation and may present a major obstacle. In addition, homogenous group motivation is much harder to achieve when a significantly larger number of people is involved. Finally, coordination of actions over a wider geographical area is more difficult. Influencing power of transnational groups will therefore most probably be limited to the first three dimensions listed above.

However, the first determinant of integration processes in the rationalist-supranationalist account, the intensity of activities by transnational society, will not be further analyzed in the framework of this study. Ladenbauer (2005: 94ff.) has shown that the influence of transnational interest groups was an important factor leading to the launch of the Single European Sky initiative by the European Commission in 1999. One of the principal actors was the *Association of European Airlines* (AEA) whose members were most intensely affected by the increasing delay situation, due to the lack of air traffic control capacity in the European airspace caused by fragmentation. Obviously a clear requirement for supranational rulemaking was perceived by this transnational actor to reduce the level of fragmentation in ATM. The AEA therefore – via lobbying and public framing of the issue – promoted an integrated solution and continues to do so.[42] However, since the inception of the Single Sky program, the main driver of integration is the European Commission itself. On the other hand, the possibility might exist that transnational interest groups actually *oppose* integration and work towards influencing EU institutions respectively. This is rather unlikely, as the very nature of transnational coalitions is to foster cooperation based on shared interests and visions. Moreover, any obstructing tendencies will be

[41] See, for instance, Risse (2001).

[42] See AEA (2010).

discovered when analyzing domestic stakeholders who usually compose the membership of a transnational organization. There is therefore no necessity to further detail the presence of transnational activity in respect of ATM integration. The present analysis will focus on the subject of supranational institutionalization, i.e. on the development of rules and regulations during the phase of SES development.[43]

1.3.2 Bargaining power in international negotiation settings

The second determinant of integration in the liberal-intergovernmentalist perspective which becomes relevant subsequent to the process of domestic preference formation is a nation state's bargaining power in an international negotiation framework. Theory maintains that bargaining power is mainly connected to the preference intensity related to cooperation and/or integration: the greater the wish or need of a state to cooperate, the lower the respective negotiation power. Moravcsik lists additional factors that have an impact on the ability to control negotiation outcomes:[44] 1) the capacity to effectively pursue unilateral policies, 2) the ability to form alternate coalitions, or 3) the possibility to link various policy issues. As it seems unlikely that a high preference for integration exists while being able to successfully define unilateral policies, the first element might already be reflected in the level of preference intensity of a nation state. It may still be the case, though, that a state exhibits an interest in cooperation and integration despite being capable of walking its own path. This may occur for moral or solidarity reasons, to foster interests in other issue areas, or because the overall benefit of a cooperative strategy is recognized. Moravcsik also puts forward conditions under which states (and their domestic interest groups) are willing and ready to transfer decision-making authority to a supranational level and thereby allow for integration. They comprise benefits from cooperation and central decision-making, perceived uncertainties as to the outcome of future decisions, and a low risk of unwanted supranational decisions. However, these conditions will most certainly be reflected by the national preference structure, as they constitute part of the considerations of governments and domestic actors.

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[43] See hypothesis 2 in section 1.4.

[44] See sub-section 1.2.2.

Consequently, when determining nations' relative bargaining power one should prioritize the following four variables: a) preference intensity as defined in the context of a domestic preference formation process, b) unilateral capacity to act in a specific policy domain, c) ability to form alternate coalitions, and d) opportunities for issue linkage and compromise. The strongest bargaining position is provided by the ability to unilaterally define policy which is equally beneficial to a nation state when compared to a coordinated solution, since any negotiation outcome inferior to that position will not be accepted. The same applies if low preference intensity prevails in respect of cooperation or integration in a specific domain: as there is no real urge to cooperate, there is no need to compromise or deviate from one's negotiation position. Although to be expected in practice, it does not necessarily imply the ability to act unilaterally or vice versa. Low preference intensity is therefore put second in order. Should a high preference in favor of cooperation prevail, the possibility to form alternate coalitions may provide some bargaining leverage. This 'exit option' will only be rewarding if the respective nation's preferences correspond to the interests of the members of the alternate coalition. This ability is therefore no guarantee for success and thus is ranked number three in priority. Finally, bargaining power can be influenced by the ability to compromise, link issues to each other, or to effect side payments. As noted above, these options refer to differences between preferences at the margin of a set of agreements. They allow adjusting a negotiation package in its final stage, but normally cannot be used to settle the 'big deals'. In sum, the following order of priority is proposed when determining relative levels of bargaining power:

Priority	**Factors**	**Explanation**
1	Capacity for unilateral policy definition	Ability of a nation state to define its own uncoordinated policies in a specific issue area without facing negative policy externalities
2	Low preference intensity	Lack of perceived necessity to reach a specific agreement on a negotiated issue
3	Ability to form alternate coalitions	Availability of the option to cooperate with other nations than previously foreseen, to be able to attain the same objectives and benefits of policy coordination
4	Possibility for compromise, issue linkage and side payments	Ability to make use of differential preference intensities at the margin of one issue area, or across various issue areas, to enable mutually beneficial negotiation outcomes

Table 3: Factors determining 'bargaining power in inter-state negotiations'

1.3.3 Autonomy of supranational organizations

As shown earlier, rationalist supranationalism – in contrast to liberal intergovernmentalism – puts its focus on the transnational and supranational level when attempting to explain integration in the European context. The role of transnational actors in promoting integrative processes was already elaborated on. Transnational activity was demonstrably involved in the process of initializing the development of the Single European Sky.[45] Therefore, the second and third dimensions which both reflect and, according to rationalist-supranationalist theory, promote further integration are of primary interest to this study: the development of European Union institutions' autonomy and the expansion of supranational rules, in other words, the degree of institutionalization. According to theory, both elements are interrelated: supranational organizations use their ability to act autonomously within a certain legal framework to come up with new agenda items and legislative proposals, which often result in more comprehensive supranational regulation and, consequently, integration.[46] This, in turn, broadens the competences of supranational bodies in terms of rulemaking and interpretation of rules, whereby they are provided with a new basis for further policy initiatives. One relevant question to be looked at is whether such a dynamic can also be observed within the Single European Sky program. More specifically: Has the density of regulatory content related to SES augmented since the beginning of the project and, if so, is this increase connected to the transfer of additional competences to the European Union from member states, or was it initialized by the relevant EU bodies within the scope of their existing authority as rationalist-supranationalist theory suggests? If the latter is empirically supported, it may provide an indication that individual EU member states are not in full control of all the rulemaking processes ongoing in this policy area. Ultimately, the SES regulations at EU level set the legal framework for the creation and development of functional airspace blocks, and so this aspect is of high importance to the present study.

[45] See sub-section 1.3.1.

[46] See also Schmitter (2004): 62.

According to Stone Sweet and Sandholtz, the autonomy of supranational organizations is characterized by their ability to define and pursue a politically relevant agenda on an ongoing basis.[47] The agenda setting process determines those subjects which will be attended to on a political level and keeps other topics out of scope. Since alternative political decisions can only be taken on items that are in fact present on a political agenda, Schattschneider (1960: 68) maintains that this "definition of alternatives" is a "supreme instrument of power". The ability to define a relevant political agenda requires certain competences in terms of the issue areas that are subject to supranational regulation. Agenda items can only relate to policy areas where supranational rulemaking is possible. Agenda setting, however, is only a first step as Stone Sweet/Sandholtz also indicate, by adding the ability to "pursue" a relevant agenda. After an item is put on the agenda list, policy alternatives have to be formulated and later decided according to a specific decision-making procedure, possibly involving several bodies with different competences and decision-making rules. Only by following this process, which is part of the policy cycle,[48] new supranational regulation can be implemented. In order to assess the autonomy of a supranational organization, the relevant phases of the policy cycle to be analyzed are the *agenda setting* and the *decision-making* phase, taking into account the institutions involved in the process. The autonomy of the supranational organization may be considered to increase when this process runs independently from the influence of individual nation states. As the European Union is the organization focused on by this study, the necessary enforcement mechanisms are already in place to ensure proper implementation of new regulation.[49] This latter aspect may therefore be set aside in the present analysis.

[47] See sub-section 1.2.3.

[48] The 'policy cycle' refers to the various stages of policymaking, beginning with agenda setting in the sense of problem identification, policy formulation, adoption, implementation, to ultimately post-implementation evaluation of policy, possibly resulting in a new agenda item, whereby the cycle is closed. See, for instance, Jann/Wegrich (2003): 81ff.

[49] See also Ladenbauer (2005): 81ff.

1.4 Hypotheses

Based on above specifications of theoretical concepts, the following hypotheses, derived from the theoretical strains previously discussed, will be subject to empirical testing in order to determine the correlation between the level of integration and several factors possibly having an influence on integrative processes in the domain of air traffic management:

Hypothesis 1a

> *The influencing power of a societal group determines the extent to which its preferences in terms of cooperation and/or integration in the area of air traffic management are reflected in the government's respective position (preference intensity).*

Hypothesis 1b

> *The bargaining power of a nation state determines the extent to which its position in terms of cooperation and/or integration is reflected in the level of integration achieved in the area of air traffic management.*

Hypothesis 2

> *The European Union seeks to enhance the quality and density of supranational regulation in order to promote integration in the area of air traffic management even without a corresponding increase of regulatory autonomy on its part.*

1.5 Correlation of independent variables

There is a requirement to examine potential correlations between independent variables included in the formulated hypotheses as this might reduce the informative value of independent hypothesis testing. As none of the three hypotheses shares the same dependent variable, the relationship between influencing factors may not have to be subjected to this examination, especially as hypothesis 1a is just a preparatory hypothesis to determine a nation's preference intensity, which in turn is one element of bargaining power included in hypothesis 1b. Nevertheless, this check is conducted to attain a high degree of completeness and to find possible correlations apart from those suggested by theory.

First, the relationship between *influencing power of a societal group* and *bargaining power of a nation state* is looked at. As stated before, liberal-intergovernmentalist accounts suggest that a nation state's bargaining power mainly depends on its vulnerability to negative policy externalities and consequently on its preference intensity related to a matter subject to negotiation. This preference intensity originates from the requirements of the most powerful domestic pressure groups. It is not, however, solely influencing capability that affects bargaining power, but also the group's attitude and/or position towards a specific issue. Hence, there is no direct positive or negative correlation between those two variables. A possible link may only exist when a pressure group is also highly influential in the domestic setting of negotiation partners. For example, this could be true for a transnationally operating large-scale business corporation or interest group creating certain domestic dependencies in those nations. In such a case, it is conceivable that a group would be using its influencing channels at the respective national levels, which could – in theory – lead to homogenous preference intensities and thereby to a leveling-out of bargaining powers across several states. However, given the firm assumption that hardly any organization possesses that kind of power, this situation is very unlikely to occur. Furthermore, no relevant correlation exists between the two variables in the opposite direction: the various factors determining influencing power are completely independent from governmental bargaining power.

Second, and more importantly, the relationship between a *nation state's bargaining power* and the *regulatory autonomy of the European Union* is examined. Liberal-intergovernmentalist theory excludes any influence of supranational organizations on the inter-state negotiation process, with the exception of facilitation and reduction of transaction costs. On the other hand, the more autonomously a supranational organization is able to take decisions in a certain policy area, the less relevant individual bargaining power of nation states becomes. However, the theoretical bargaining power, as determined by the factors specified above, still remains unaffected. Conversely, supranational autonomy is to some extent determined by the individual preferences of powerful states which relinquish more or less decision-making authority to the supranational level. Since the *already existing* autonomy of the EU is in focus of the present analysis, this aspect is irrelevant, though.

Finally, the relationship between *regulatory autonomy of the European Union* and *influencing power of a societal group* is analyzed. The influencing capability of groups might be considered to be enhanced when, in the framework of a policy network, close links exist between a domestic pressure group and EU institutions, particularly if supranational autonomy is high. In that case, the group is able to address its policy requirements to the supranational level directly, while bypassing the national government. Governments could perceive a close connection of that kind as an opportunity to open up an indirect influence channel to the supranational institutions and, for that reason, might be more open to the opinions of that group, whereby its domestic influencing capability is increased. However, as a network link to the supranational level would be only one of several factors determining influencing power (if it, in fact, played a part at all), a respective correlation is of low significance. In the opposite direction, liberal-intergovernmentalist theory considers the sum of preferences of powerful interest groups aggregated through national governments to be an essential factor when it comes to integration and, ultimately, to the definition of supranational autonomy. Yet again, it is the already existing autonomy of EU institutions, decided at an earlier stage, which is relevant here. Such a correlation is therefore negligible.

2 CONTEXT: EUROPEAN INITIATIVES TO INTEGRATE AIR TRAFFIC MANAGEMENT

Chapter introduction and summary

This chapter describes the various initiatives carried out over more than 50 years in order to foster an integrated ATM system in Europe. The first section delineates the development of the *European Organisation for the Safety of Air Navigation*, Eurocontrol, founded in 1960. The initial aspiration to introduce "a common organization of air traffic services in the upper airspace"[50] led to several integration activities at the operational level and even included the establishment of a multinational cross-border upper area control center. From the mid-1970s onward, the functional and political pressure for an integrated solution diminished and left Eurocontrol with the role of an expert and coordinating body. Although efforts were made to enhance the institutional power of Eurocontrol, after the problems of a fragmented ATM structure became more salient in the course of the aviation upswing in the 1990s, the effects were minimal and limited to harmonization only. The European Commission therefore launched the *Single European Sky* initiative, covered by the second section of this chapter. In close cooperation with Eurocontrol, and making use of the institutional powers of the European Union framework, the Commission is currently driving an ambitious and wide-ranging integration program in the field of ATM. Two subsequent legislative packages were issued and the corresponding implementing rules defined to regulate air navigation service provision, airspace organization, as well as technical interoperability and development. However, the Commission does not have the authority to enforce structural changes such as the establishment of functional airspace blocks without the consent of member states. The Commission therefore attempts to promote respective changes, amongst a series of measures, through a rigid and comprehensive performance scheme.

[50] See article 1 of the founding Eurocontrol Convention.

2.1 Eurocontrol: The first step towards a European ATM system

2.1.1 The inception

After the end of World War II, the European air traffic management system, organized strictly on a national basis, was confronted with significant challenges: The economic upswing subsequent to the war, the development of jet aircraft operating at higher speeds and altitudes compared to their propeller-driven counterparts, and the deployment of allied air force squadrons in former Western Europe in the wake of an emerging east-west-conflict resulted in a substantial growth of continental and trans-Atlantic air traffic (Mahon 2003: 130ff.). Since the basic principle of 'see and be seen' was no longer safe to avoid collisions, aircraft using the same portion of airspace had to be coordinated from the ground. In 1957, the International Civil Aviation Organization (ICAO) asked its contracting states to consider the conclusion of mutual international agreements to enable air traffic control regardless of national boundaries – particularly in the upper airspace above 20'000 feet – in order to accommodate the flight envelopes of the new generation of aircraft. At an ICAO European regional meeting in Geneva in January 1958, the Director Generals of Civil Aviation of the Federal Republic of Germany, Belgium, the Netherlands, and Luxembourg announced their intent to mandate a task force with the planning of a common international air traffic control center. This task force, which later also involved members from France, Italy, and the United Kingdom, presented a first report in January 1959 envisaging the creation of an international organization to control air traffic in the (former) Western European upper airspace. Further study work was subsequently conducted in technical, operational, and institutional domains (Eurocontrol 1978: 10f.). With the exception of Italy, which backed out for internal political reasons, the representatives of the remaining participating states signed on 13 December 1960 the *International Convention relating to Co-operation for the Safety of Air Navigation 'EUROCONTROL'* (*ibid*., 203). After ratification of the Convention, the *European Organisation for the Safety of Air Navigation (Eurocontrol)* seated in Brussels (Belgium) formally came into force on 1 March 1963.

2.1.2 Functional and institutional developments

Eurocontrol constitutes an international organization in accordance with public international law. Its Convention defines the institutional setup, the activities, and the competences of the organization. The founding Convention of 1960 was substantially amended in 1981 and 1997, which also reflects the functional development of Eurocontrol.[51] The first decade after the creation of Eurocontrol saw a high intensity of ATM-related integration activities. Several international projects were realized to meet the objective of a "common organisation of air traffic services in the upper airspace", as stipulated in article 1 of the founding Convention. In January 1967, the *Eurocontrol Experimental Center* (EEC) was established in Brétigny-sur-Orge (France) to conduct research and development in the area of ATC technology and to promote technical coordination and harmonization at an international level. In 1969, Eurocontrol opened its own training academy at the *Institute of Air Navigation Services* (IANS) in Luxembourg, with the aim of harmonizing training standards. A *Central Route Charging Office* (CRCO) at the Brussels headquarters took care of the collection of route charges imposed on airspace users on behalf of the contracting states, a service later extended to non-participating members.

A key milestone for Eurocontrol was the implementation of a multinational cross-border *upper area control center in Maastricht* (the Netherlands) in February 1972. MUAC took control over the upper airspace covering Belgium and Luxembourg, later also including the Netherlands and the north-western part of the Federal Republic of Germany. From the beginning, the center featured state-of-the-art technology and joined together civil and military air traffic controllers under one roof, facilitating the coordination of the different categories of airspace users. The original intention was to extend the area of responsibility of MUAC to the southern part of Germany as well (Eurocontrol 1970: 15); however, due to the lack of infrastructural capacity, a new control center was constructed in the area of Karlsruhe (Germany) in accordance with Maastricht's technological standards. The Karlsruhe center was supposed to also manage the upper airspaces of Switzerland, Austria, as well as parts of France. Yet, at the time of completion of the building

[51] See Ladenbauer (2005): 21ff.

in 1977, the concerned states were not ready to transfer the required competences in analogy to the Maastricht solution (Ladenbauer 2005: 23). The area of responsibility of the Karlsruhe center thus remained restricted to the southeastern part of Germany and therefore was eventually taken over by the German air navigation services authority, leaving Eurocontrol with Maastricht as the only multinational control center. This marked the beginning of a longer period of stagnation in terms of integrative activities. Ladenbauer (2005: 100f.) explains this decline coming about due to the progress made in ATM technology and the faltering growth of air traffic in the beginning of the 1970s, which permitted the existing national air navigation service organizations to cope with the traffic demand at that time. This alleviated the need for a cooperative approach. Already by 1966 it became apparent that the objective formulated in article 1 of the Convention was not supported by all participating states. A study group was therefore tasked to reassess the role of Eurocontrol and to delineate possible future options for the organization.[52] As the validity period of the first Convention was set to twenty years, the institutional changes were not effected until 12 February 1981. In the respective amendment protocol to the Convention, which was ratified by all contracting states in 1986, the intent to establish a common organization for the provision of air traffic services was abandoned. Instead, it was decided that the cooperation between states in the framework of Eurocontrol should be strengthened to develop common objectives and plans in the domain of air traffic management and to coordinate all required measures to ensure safe and efficient air navigation.[53]

After the European air transport sector was subjected to deregulation and liberalization at the end of the 1980s, air traffic increased considerably and pushed the capacity of the air traffic management system to the limits, resulting in a substantial rise in flight delays (Ladenbauer 2005: 83f.). The rapid availability of new aircraft, which accommodated the enhanced demand for air transportation, contrasted with an ATM infrastructure developing too slowly. Eurocontrol took on a central role in the subsequent debate about possible solutions to this issue, as the organization had acquired substantial expertise in the area of air traffic management over the years in particular due to its comprehensive operational

[52] See Eurocontrol (1966).

[53] See article 1 of the amended Eurocontrol Convention.

and technical research and development programs. Between 1988 and 2000, six *Ministerial Meetings on the Air Traffic System in Europe* (MATSEs) were held in the framework of the *European Civil Aviation Conference* (ECAC).[54] These meetings served as a platform for ECAC member states' ministers of transport to discuss with experts the problems related to European air traffic management and to define remedial actions. Following these meetings, Eurocontrol was tasked with the implementation of suitable measures. A major result of the first MATSE, held in October 1988, was the creation of a *Central Flow Management Unit* (CFMU), inaugurated in 1996 at the Eurocontrol headquarters in Brussels. It is a central Air Traffic Flow and Capacity Management (ATFCM) function, designed to balance air traffic demand with available ATM capacity, to smooth traffic flows, and to ensure protection from system overload.[55] The CFMU still plays an important role in managing air traffic over Europe. In 1990, a *European Air Traffic Control Harmonisation and Integration Programme* (EATCHIP) was launched, aiming at increasing capacity by harmonizing and further developing ATM technology and operational procedures (Ladenbauer 2005: 25). Further measures arose along the interface between airports and the air traffic system, pursued under the so-called *APATSI Programme*. The corresponding package also included the implementation of a *Central Office for Delay Analysis* (CODA) to gain a more comprehensive picture about the flight delay situation in Europe (ECAC 1997: 8). In 1997, EATCHIP and APATSI were joined together into a *European Air Traffic Management Programme* (EATMP) and supplemented in 2000 by the *ATM 2000+ strategy*, introducing a gate-to-gate concept of air traffic management. The latter implies a comprehensive view on all phases of air traffic management handling of a flight, beginning with the first contact to the ATM system, up to charging for air traffic services after arrival. A major component of the ATM 2000+ strategy was the objective to realize a pan-European airspace continuum by implementing a harmonized airspace structure, as well as a seamless and coordinated airway network. However, this strategy did not specify to what extent cross-border arrangements between national air navigation service providers would be necessary to achieve this goal (Eurocontrol 2002a).

[54] See www.ecac-ceac.org.

[55] See www.cfmu.eurocontrol.int.

In spite of all these steps taken on the functional level, it soon became evident that the sole coordination of national air traffic management activities would not suffice to substantially improve the situation. Repeatedly, there were calls for an integrated European air traffic management system based on one executive authority, fully interoperable technology, and common standards and procedures (ECAC 1997: 8). One of the chief shortfalls of Eurocontrol proved to be the organization's lack of authority to force member states into adopting defined standards. In addition, the inertness of its executive bodies' decision-making procedures (based on unanimity) was also apparent. In 1994, the fourth ECAC ministerial meeting mandated a study to examine the possibilities for institutional changes and the expansion of Eurocontrol competences. The respective *ECAC Institutional Strategy* was adopted at MATSE 5 in February 1997 and provided the basis for a third revision of the Eurocontrol Convention to be known as the *revised Convention*. In the course of this revision, additional regulatory units and processes were introduced to render the coordination of common efforts towards a harmonized air traffic management system more effective (ECAC 1997: 26ff.). Another significant change was the increased application of the majority voting principle in internal decision-making procedures. The revised Convention also allowed for membership of "regional economic integration organizations" at Eurocontrol,[56] which provided the legal basis for the accession of the European Union to the organization. The ratification by respective member states, both of the revised Eurocontrol Convention (signed in June 1997) and of the accession protocol of the European Community (signed in October 2002), is, to date, still pending. Nevertheless, they are applied on a provisional basis.

2.1.3 Governance structure of Eurocontrol

Until completion of the ongoing ratification process of the revised Convention, Eurocontrol is managed through a provisional governance structure based on the setup defined in the new agreement. Political governance of Eurocontrol is ensured by the *Permanent Commission,* which is composed of the representatives of member states on a ministerial level. After the revised Convention comes into force, it will be renamed *General Assem-*

[56] See article 40 of the revised Eurocontrol Convention.

bly. The *Provisional Council* (later: *Council*), one hierarchical level below, consists of the national director generals for civil aviation and of their military counterparts. It carries out an advisory function in support of the Commission, assures the execution of the Commission's general political guidelines, and supervises the activities of Eurocontrol. In the context of the institutional reorganization effected by the revised Convention, a number of additional bodies have been introduced that directly report to the Provisional Council. These include: a *Performance Review Commission* (PRC), responsible for performance assessments and the setting of performance targets to enhance efficacy of the air traffic management system; a *Safety Regulation Commission* (SRC), developing harmonized safety regulatory objectives and requirements; and a *Civil-Military Interface Standing Committee* (CMIC), providing advice on any matter concerning the coordination of civil and military needs related to ATM. The executive body of Eurocontrol, the *Agency*, is administrated by a *Director General* who is the external representative of Eurocontrol and possesses a right of initiative towards his superior boards.

In 2011, Eurocontrol counted 39 member states. In the course of the organization's efforts in support of a harmonized pan-European air traffic management system, it has evolved into an important focal point for all actors associated with the ATM domain (Van Dam 2004: 20) and is well recognized as a neutral and competent expert authority. Today, Eurocontrol plays a significant role with regard to the development of the Single European Sky program, as the organization advances towards becoming the 'executive arm' of the European Commission in the domain of air traffic management. The Agency has already been restructured to ensure that its activities are tailored towards working on the Single European Sky together with the European Union.[57] It is therefore expected that Eurocontrol will face more structural and institutional changes in the mid-term future.[58]

[57] See Eurocontrol (2010a).

[58] See sub-section 2.2.3.

2.2 Single European Sky

2.2.1 Initial developments

The *Single European Sky* initiative was launched in 1999 by the Commission of the European Union. The Commission already recommended in 1988 various measures at Community level to counteract the problems associated with the bottlenecks of the air traffic service system.[59] However, the Council rejected related proposals at that time, having regard to the ongoing multilateral cooperation in the framework of ECAC and Eurocontrol (European Commission 1996: 7f.). In 1995, the European air traffic delay situation reached another climax, whereupon the Commission submitted a *White Paper on Air Traffic Management*.[60] It identified the main structural deficiencies of the air traffic management system and presented possible options for a future single ATM network. The Commission argued that, due to the national diversity prevailing in Europe, a highly centralized "monolithic" air traffic management structure would not be realizable (European Commission 1996: 20). Instead, Eurocontrol should be given broader regulatory competences, while the provision of air navigation services would remain under the responsibility of individual states – with the exception of centralized air traffic flow management, which was already carried out by Eurocontrol. Strengthening Eurocontrol would also be advantageous from a regulatory point of view, as its extensive geographical scope (which includes non-EU-members) could be made use of. Moreover, the European Union possesses jurisdiction in the domain of air transport, and thus also in the area of air traffic management, in accordance with the EU treaties.[61] The possibility of the European Union becoming a member of Eurocontrol should therefore be considered in order to ensure compatibility of Eurocontrol standards with EU policies and to facilitate the implementation of respective decisions.

[59] See European Commission (1988).

[60] See European Commission (1996).

[61] See sub-section 5.2.1.

Urged by massive flight delays associated with large-scale airspace closures during the Kosovo-crisis in 1999, the Commission concluded that previous efforts to improve the air traffic situation in Europe had been inadequate and called for substantial structural reforms in the area of air traffic management (European Commission 1999). Besides ensuring operational and technical interoperability, a collective management of airspace *regardless of national boundaries* and along the lines of efficiency should be aspired to (*ibid.*, 4f.). In addition, collective decision-making processes to involve all relevant players should be established and research and technological developments intensified. The Commission announced the implementation of a high level group to specify the necessary reform steps based on the Commission proposal of a *Single European Sky*. The high level group was composed of representatives of the civil and military aviation authorities of the EU member states, Norway, and Switzerland, and obtained advice from Eurocontrol, the ATM industry, staff representatives, as well as airspace users (European Commission 2000: 9f.). The group convened a first meeting in January 2000 and submitted its report at the end of the same year. To support the creation of a Single European Sky, the high level group recommended:

- establishing suitable and effective regulatory structures in the framework of the EU institutions both for civil and military aviation, independent from ANSPs;
- integrating non-EU-states into the regulatory framework through bilateral agreements and/or through Eurocontrol;
- making use of the operational and technical expertise of Eurocontrol;
- creating, regulating, and administrating airspace as a common resource at European level, thereby considering civil and military interests;
- reforming the charging regime to stimulate cost-effectiveness and to create incentives for capacity-enhancing measures;
- harmonizing training and licensing of ATS personnel to foster mobility;
- implementing wide-ranging consultation procedures at European level.

2.2.2 SES I

Regulatory framework

Based on the very detailed report of the high level group and its recommendations, the European Commission completed a first set of regulations by the end of 2001. This package included the *Framework Regulation for the Creation of the Single European Sky*,[62] the regulatory foundation of SES; the *Service Provision Regulation*;[63] the *Airspace Regulation*;[64] and the *Interoperability Regulation*.[65] The Framework Regulation explains the necessity for the creation of the Single European Sky, states the concept's general objectives, and defines the institutions and procedures needed for its implementation. In particular, it requires the separation of provision of air navigation services and regulation/oversight of such services by establishing separate *national supervisory authorities* (NSAs). The three subsequent regulations provide guidance for action in domains that are relevant to the realization of SES: The Service Provision Regulation mandates the European Commission to establish uniform criteria and standards by which air navigation services should be provided within the EU and associated states, and spells out the basic principles for the certification of ANS organizations. The goal of the Interoperability Regulation is the development of compatible ATM technical systems and procedures. The Airspace Regulation aims at promoting the provision of air traffic services according to functional criteria, irrespective of national boundaries. This encompasses the harmonization and simplification of the airspace structure, the implementation of *functional airspace blocks* (FABs) across the upper airspace of several nation states, the flexible use of airspace between civil and military air traffic, and the centralized management of air traffic flows. It is important to note that according to (former) article 5 (4) of the Airspace Regulation,[66] functional airspace blocks are to be established by *mutual agreement* between states. Hence, the European

[62] Regulation (EC) 549/2004.

[63] Regulation (EC) 550/2004.

[64] Regulation (EC) 551/2004.

[65] Regulation (EC) 552/2004.

[66] This provision was later moved as article 9a (3) to the Service Provision Regulation.

Union does not possess the authority to impose a functional airspace structure onto member states. EU competence in this domain is restricted to the formulation of criteria according to which FABs should be created. Nevertheless, states are required to cooperate to the maximum extent possible and to establish FABs in a 'bottom-up' approach.

Implementation process

Based on the four basic SES regulations, which were adopted on 10 March 2004 by the Council of the European Union and the European Parliament, the European Commission has pursued the concretization and implementation of the Single European Sky by means of *implementing rules*. According to article 290 TFEU,[67] the Commission enjoys limited legislative power if so foreseen by the respective overarching regulatory framework, in this case, the SES regulations. This is done in accordance with the so called 'comitology method',[68] whereby a specifically designated committee composed of member state representatives comments and votes (by qualified majority) on proposed regulation before final adoption by the Commission. The comitology method ensures state involvement and influence at the level of implementation. For the creation of implementing rules in the domain of SES, three comitology procedures are applicable, the use of which is specified in the various provisions of the framework regulations. The *advisory procedure*, the weakest form in regard to committee involvement, simply requires the Commission to take into consideration the committee's opinion before adopting a regulation under discussion; in case of the *regulatory procedure*, a negative opinion of the committee can be deferred to the Council for further discussion and decision; finally, when applying the *regulatory procedure with scrutiny*, the committee opinion, whether positive or negative, is automatically forwarded to Council and European Parliament who independently have the potential to oppose a regulation proposal in accordance with their respective voting procedures. In the Single European Sky program, this committee function is assigned to the *Single Sky Committee* (SSC) where each EU member state is represented with one civil and one military official but possesses one vote only. Non-EU-members affiliated with the Union

[67] Consolidated version based on the Treaty of Lisbon, in force since 1 December 2009.

[68] See Council Decision 1999/468/EC as amended by Council Decision 2006/512/EC.

through bilateral agreements (such as Switzerland, accession candidates to the EU, as well as Eurocontrol) participate in the SSC as observers.

Industry Consultation Body (ICB)

Based on the SES Framework Regulation, the *Industry Consultation Body* (ICB) was established with the aim of supporting the implementation of the Single European Sky (European Commission 2011a). The ICB involves all interested actors that have a stake in air traffic management. They include air navigation service providers, airspace users, airports, ATM industry, and staff representatives. The function of this consultative group is to advise the Commission on technical and operational matters and to define the long-term strategy of the air traffic management system.[69] The ICB is an SES specific committee and exists independently from the internal consultation mechanisms of Eurocontrol.

Social Dialogue

It is a basic requirement in the European Union to establish sectoral dialogue committees that offer an institutionalized framework to debate social issues associated with EU activities.[70] The Framework Regulation for the Single European Sky program also provides for a corresponding *Social Dialogue*. Respective platforms at various levels have been established for that purpose. Besides the civil aviation sector dialogue, which includes staff and employer representative organizations from the entire branch, consultative expert groups specifically related to air traffic management are also in place to advise the Commission with respect to the implementation of the Single European Sky regarding all measures that have social implications.[71]

[69] See ICB (2007).

[70] In accordance with Commission Decision 98/500/EC.

[71] See Commission Decision C/2010/9016.

2.2.3 Involvement of Eurocontrol in the Single European Sky

The SES Framework Regulation particularly emphasizes the need for close cooperation with Eurocontrol. Due to its long-standing reputation in the domain of European air traffic management, Eurocontrol is considered to be the suitable organization to support the European Union's regulatory function and to develop the operational and technical implementing rules and specifications. In order to define the areas and methods of such cooperation and to complement and mutually reinforce respective activities, a memorandum of cooperation was signed between the European Commission and Eurocontrol in December 2003. From the inception of the Single Sky concept, the membership of the European Union at Eurocontrol was seen as an important element to render this synergetic partnership most efficient.[72] The respective accession protocol was signed in October 2002 and formally concluded on 29 April 2004 by Council Decision. As formal entry into force is subject to ratification and also linked to the final ratification by all signatory states of the Eurocontrol revised Convention, the relevant articles of the protocol are applied on a provisional basis only, as is the case for the Eurocontrol revised Convention.[73]

The European Commission assigns specific mandates to Eurocontrol to support the development of ATM-related operational and technical regulation. The mandated implementing rules are elaborated within the framework of the organization's internal regulatory mechanisms, making use of its extensive consultation processes in order to ensure inclusion of a broad variety of stakeholders and to strive for a widest possible consensus. Apart from this regulatory support function, Eurocontrol has been charged over time with additional coordinating functions and continues to play an important role in respect of technological research, as well as ATM system development and deployment in the framework of SESAR (Single European Sky ATM Research; see below). Moreover, the pan-European dimension of the organization is seen as an opportunity to expand the vision of a Single European Sky beyond the European Union and its affiliated countries. It is planned to further strengthen the formal relationship between the European Union and

[72] See sub-section 2.2.1.

[73] See sub-section 2.1.2.

Eurocontrol in the form of a high level agreement, which will possibly be followed by another institutional reform of Eurocontrol.[74]

2.2.4 SESAR (Single European Sky ATM Research)

A key element for the successful realization of a Single European Sky is to overcome the technical fragmentation in today's air traffic management infrastructure and to develop technologies that will be able to cope with future air traffic demands. An initiative of the ATM supply industry asking for a coordinated approach to solve this issue was taken up by Eurocontrol and the European Commission in 2004 and conveyed in SESAME, the *Single European Sky Implementation Programme*, which was later renamed *SESAR (Single European Sky ATM Research)*. The first objective of SESAR – covered in the framework of a 'definition phase' launched in November 2005 – was to create a vision of future air traffic management performance requirements and the corresponding future ATM concept of operation, and to set out a technological roadmap for the development and implementation of the systems necessary to accommodate that vision. This was to be outlined by a *European ATM Master Plan*. From its beginning, SESAR aimed at involving all relevant aviation players in this pan-European technological modernization project. The goal was to obtain a complete picture in terms of stakeholders' views and to synchronize efforts as well as the use of resources. The 'definition phase' was managed by Eurocontrol and carried out by a contract-based consortium composed of 29 members including air navigation service providers, airspace users, airports, ATM supply industry, as well as aircraft and airborne equipment manufacturers. Several ATM research centers, staff representative bodies and ATM industry corporations from the United States of America also contributed to the work as associated partners to the SESAR Consortium. In March 2009, the main result of the 'definition phase', the SESAR Master Plan, was endorsed by the Council of the European Union as the initial version of the *European ATM Master Plan*,[75] whereby the continuation of the SESAR program was formally supported along the proposed lines through the 'development phase'. This phase is currently ongoing and sched-

[74] See Tytgat (2011); see also European Commission (2011b): 3.3.

[75] See SESAR JU (2009).

uled to be officially completed in 2013. The objective of this phase is to develop the equipment, systems, or standards, which will ensure convergence towards a fully interoperable European air traffic management system according to the master plan.[76] In February 2007, the Council adopted Regulation 219/2007, establishing a 'Joint Undertaking' for the management of the SESAR development stage. This was motivated by the need for an effective governance structure with legal personality to run this large-scale public-private partnership project in a coordinated way.[77] The *SESAR Joint Undertaking* (SESAR JU) is a non-profit entity enjoying the status of an international organization.[78] It is composed of the European Commission, Eurocontrol, and 15 organizations that have signed a membership agreement with the SESAR JU. They include all relevant industry branches already involved in the 'definition phase' of SESAR. The SESAR JU is governed by an administrative board, which is chaired by a representative of the European Commission. It comprises military organizations as well as professional staff associations. An executive director is responsible for the execution of the SESAR project. Coordination is also effected with ongoing ATM modernization programs in other parts of the world and with the International Civil Aviation Organization (ICAO) to ensure global compatibility and interoperability of technologies. On 3 March 2011, a memorandum of cooperation was signed between the European Union and the civil aviation authority of the United States of America, the Federal Aviation Administration (FAA).[79] Funding of the estimated 2.1 billion Euro SESAR development phase is equally shared by the European Union (European Commission and Trans-European Transport Network fund), Eurocontrol, and industry. The 'deployment phase', intended to begin in 2014 and continuing through 2020, is expected to see the subsequent implementation and installation of the newly developed ATM infrastructure, which will be carried out mainly under the responsibility of the industry. The goals set for the future technological ATM environment are ambitious: the performance targets to be achieved by year 2020 are a threefold increase in ATM capacity, the improvement of safety by a factor of 10, the reduction of the environmental impact per flight by 10%, and to cut ATM costs by 50% (SESAR JU 2011: 2).

[76] Council Regulation (EC) No 219/2007, recital 10.

[77] See European Commission (2005).

[78] See www.sesarju.eu.

[79] See European Commission (2011c).

2.2.5 Achievements and shortfalls of SES I

The Framework Regulation requires the European Commission to periodically review the application of the Single Sky legislation and to report to Council and European Parliament every three years on the respective progress.[80] The first report was submitted in December 2007 and lists the accomplishments of SES within the first three-year period following the launch of the initiative.[81] It highlights the basic achievements, such as the introduction of an institutional structure for Community action in the field of air traffic management involving all relevant stakeholders, thereby referring to the Single Sky Committee, the Industry Consultation Body, and the cooperation agreement with Eurocontrol. Separation of air navigation service provision from regulation was achieved in all EU member states to ensure independence of regulatory and oversight activities by national supervisory authorities (NSAs). The certification of ANSPs against common requirements as set by the European Union was introduced, and a Community air traffic controller license was established, setting a harmonized level of competence and increasing intra-European mobility for ATCOs. Transparency was advanced in the area of ANS charges by requiring air navigation service providers to disclose their individual cost bases. Airspace improvements included new rules on the flexible use of airspace between civil and military airspace users and the harmonization of airspace classifications in the upper airspace. Finally, the SESAR project was initiated and an interoperability mechanism introduced that allows for the development of Community specifications related to technical systems and their operational use.

Nevertheless, various SES domains were still under development at the time of reporting, showing only little advancement in certain key areas. This mainly concerns airspace harmonization in the lower airspace, or the implementation of functional airspace blocks. The requirement set in article 5 of the Framework Regulation to establish FABs using a ‘bottom-up’ approach had led to a number of corresponding initiatives by member

[80] Article 12 (2) of the Framework Regulation EC 549/2004.

[81] See European Commission (2007a).

states.[82] However, according to the Commission report, these initiatives were only progressing slowly and with varying intensity of efforts and ambition. The expected benefits of FAB implementation, i.e. improved flight efficiency by more direct routes, cost reduction, and general system defragmentation by consolidation and integration of ATM infrastructure and services, had not yet materialized. Although the delay problem had generally receded in the years after the aviation slowdown following the terrorist attacks on 11 September 2001 in the U.S.A., new challenges such as increased fuel costs and environmental considerations continued to push for improvements in both economic and flight efficiency. The Commission therefore concluded in its assessment report that a second Single Sky legislative package was necessary to overcome the deadlocks present at this stage of development and to give the process additional thrust. This was also based on the recommendations made by a second high level group, installed in November 2006 to advise the European Commission on the future of the European aviation regulatory framework. The related conference asserted that there was a need to foster the 'Community method'[83] in order to reduce the inefficiencies stemming from fragmentation and duplication in the European aviation system, which was still seen as a considerable hindrance to the realization of the Single European Sky.[84] The high level group subsequently issued a package of proposals.[85] The group recommended:

- strengthening the role of the EU and the Community method as the sole vehicle to set the regulation agenda for European aviation by eliminating overlaps between EU and other regulatory processes;
- appointing an 'Aviation System Coordinator' to drive forward necessary actions;

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[82] See chapter 3.

[83] According to www.europa.eu, glossary (October 2011): The 'Community method' is the expression used for the institutional operating mode for the first pillar of the European Union (as conceived by the Treaty of Maastricht). It proceeds from an integration logic and has the following salient features:
- Commission monopoly of the right of initiative
- general use of qualified majority voting in the Council
- an active role for the European Parliament in co-legislating frequently with the Council
- uniformity in the interpretation of Community law ensured by the Court of Justice

[84] See Barrot (2006).

[85] See European Commission (2007b): 7ff.

- involving aviation industry more systematically in the rulemaking process for the aviation system and making it possible to compete for contestable activities in ATM, such as MET, AIS, and CNS infrastructure;
- driving improved performance, in particular in the monopoly elements of ANSP activities by setting performance objectives, maximizing the use of incentives and requiring independent performance reporting;
- accelerating the delivery of SES and SESAR through proactive management and annual monitoring of progress by the European Commission;
- focusing the activities of Eurocontrol on pan-European functions and ATM network design, as well as on the support to regulation;
- addressing the forthcoming airport capacity crunch by raising the profile of this emerging bottleneck in the European aviation system;
- empowering EASA[86] as the single EU instrument for aviation safety regulation, implying transfer of all safety regulation activities from Eurocontrol to EASA;
- developing an integrated strategy to accommodate environmental aspects of aviation and air traffic management.

2.2.6 SES II

On the basis of the above recommendations, the European Commission proposed a second Single Sky legislation package in 2008, amending the existing regulatory framework. The Council of the European Union and the European Parliament adopted this second package on 21 October 2009.[87] It focuses on the following four pillars:[88]

[86] The European Aviation Safety Agency (EASA), founded in 2003, is the EU rulemaking body for safety and environmental protection standards in European civil aviation. It is located in Cologne, Germany; see easa.europa.eu.

[87] See Regulation (EC) 1070/2009.

[88] See European Commission (2008).

- implementation of an effective performance framework including a new charging regime;
- consolidation of safety regulation and oversight within a single safety framework in the body of the European Aviation Safety Agency (EASA);
- advancement of new technologies in the framework of SESAR;
- increased consideration of airport capacity.

New performance framework and charging regime

The original SES Framework Regulation was amended and supplemented by a Commission regulation that introduced a performance scheme, which comprises various measures not only to monitor but also to drive the performance of the European ATM system in four selected key performance areas (KPAs): safety, environment, capacity, and cost-efficiency.[89] The first measure entails the establishment of an independent *Performance Review Body* (PRB),[90] responsible for assessing ATM system performance, developing key performance indicators (KPIs) for each key performance area, and proposing Community-wide quantifiable performance targets (see following sub-section). Proposed targets are subsequently approved by the European Commission and form the overarching frame for national/regional performance plans to be elaborated by national supervisory authorities, which are required to be consistent with the defined Community-wide targets. The Commission ensures compatibility between Community and national/regional targets and has the authority to direct member states to revise their performance plans, if necessary.[91] Performance targets, when finally agreed, are binding and adherence supposed to be assisted by financial incentive schemes. In support of this, the charging principle for air navigation service provision was completely revised. Whereas previously air navigation service charges had been allowed to automatically cover all costs incurred by air navigation services, the revised charging regulation requires air navigation service providers to

[89] See Commission Regulation EU 691/2010.

[90] The task of the Performance Review Body of the Single European Sky was assigned to the *Performance Review Commission of Eurocontrol* on 27 July 2010 by European Commission Decision C(2010)5134.

[91] This is done in accordance with the *regulatory procedure* of the comitology method as briefly described in sub-section 2.2.2.

announce their 'determined costs' for ANS provision in advance on an annual basis.[92] Additional income due to lower actual costs may be kept back by the ANSP, whereas costs in excess of the determined costs are to be returned to the airspace users. This revised scheme is designed to provide an incentive for air navigation service providers to apply better cost control.

The second measure is to support ongoing initiatives of setting up functional airspace blocks in order to be able to achieve the established performance targets. This includes the setting of a firm implementation deadline for FABs on 4 December 2012, the extension of the scope of FABs to include lower airspace and airports (gate-to-gate approach), and the Commission's assistance in removing both legal and institutional obstacles for FAB creation at the national level.

The third measure is to put an enhanced focus on European network management in order to ensure harmonized ATM performance across different FABs. This is to be achieved by a European airway network design, comprehensive traffic flow management, and the coordinated deployment of new technologies in the framework of SESAR. A Commission Regulation was adopted in July 2011, introducing *inter alia* the function of a *Network Manager*.[93] This function is responsible for developing and implementing a *Network Strategy Plan* followed by a more detailed *Network Operations Plan*, as well as an integrated air traffic route structure. Member states remain responsible for the detailed development and approval of airspace design matters. In addition, the Network Manager shall ensure the coordination of scarce resources, such as radio frequencies, and execute the obligations of the central unit for air traffic flow management. Performance targets are set at Network Manager level, with the overall goal to make a positive contribution to EU-wide performance targets. *Eurocontrol* was formally nominated as the Network Manager, taking into account that the organization already carries out the European central flow management function.[94]

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92 See article 11a of Regulation (EC) 1794/2006 amended by Commission Regulation 1191/2010.

93 See Commission Regulation (EU) No 677/211; detailed descriptions of the various Network Management tasks are contained in the related annexes.

94 See Commission Decision C(2011) 4130.

A single safety framework through EASA

In 2002, the European Union decided to establish a *European Aviation Safety Agency* (EASA) to allow for the safety challenges induced by the continuous growth in air traffic, capacity limitations, airspace and aerodrome congestions, and the progressive use of new technologies in aviation. EASA was founded in 2003 and mandated to assure a harmonized approach to safety regulation in combination with effective and synchronized regulation implementation. It aims to increase or at least maintain safety levels in the aviation domain. As a logical consequence and as part of the SES II package, the Commission proposed an extension of the regulatory competences of EASA and that the aerodrome and air traffic management sector should be able to pursue a 'total system approach', allowing for common standardization activities by a single entity in all relevant key safety areas. The original Commission Regulation was amended accordingly.[95] Eurocontrol, which until that time provided for safety-related regulation in the field of ATM through its Safety Regulation Commission (SRC), continues to assist EASA in this respect.

Further advancement of the SESAR program

In its communication on SES II, the Commission reiterates the major significance of SESAR, the technological pillar of the Single European Sky program, and announces that it will propose that the SESAR ATM Master Plan be endorsed by the Council of the European Union.[96] As mentioned above, the Council subsequently supported the initial version of the European ATM Master Plan in March 2009. Further updates of the plan are subject to regular endorsement.

Airport capacity

In 2007, the European Parliament and Council endorsed the *Action plan for airport capacity, efficiency and safety in Europe*.[97] The objective of this action plan is to ensure the necessary mid- and long-term investments in airport infrastructure and the use of new technologies in compliance with the SESAR program to increase airport capacity and avoid

[95] See Regulation (EC) 216/2008 as amended by Regulation (EC) 1108/2009.

[96] See European Commission (2008).

[97] See European Commission (2006).

bottlenecks on the ground, while at the same time augmenting the capacity of the air traffic management system. As a follow-up measure, the European Commission established a *Community Observatory* involving all relevant stakeholders, to monitor and exchange data and information on airport capacity and to advise the Commission on the development and implementation of capacity-increasing solutions.

2.2.7 Status of relevant SES developments (as of October 2011)

Definition of EU-wide performance targets

On 21 February 2011 the European Commission, upon proposal of the Performance Review Body, adopted the EU-wide performance targets for a first reference period (RP1) lasting from 2012 until 2014.[98] As the key performance indicators to measure 'safety' are still under development, no performance targets for this key performance area have been set for RP1.[99] Member states will be required to publish data on safety related occurrences according to a harmonized risk classification scheme and to monitor the effectiveness of implemented safety management systems, as well as the application of 'Just Culture' principles.[100] The indicators required for that purpose are due to be available prior to the beginning of the first reference period and will be included in the Performance Regulation by amendment.

The EU performance target addressing the 'environment' KPA is based on the indicator of 'en-route horizontal flight efficiency', measuring the average difference between actual and optimum flight trajectory, the latter normally being the 'great circle'.[101] The target set for RP1 is a *reduction of route extension from the optimum trajectory by 0.75% point* until 2014, deduced from the baseline average extension in 2009, which is calculated at 4.5%. A second environment KPI, which is only monitored without a related target for

[98] See Commission Decision (2011/121/EU).

[99] See Commission Regulation (EU) No 691/2010, Annex 1, as well as Eurocontrol (2010b): 15.

[100] 'Just Culture' is defined as "a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated" (Eurocontrol 2008b: 11). The idea behind this is to establish a culture where so-called 'honest mistakes' are freely reported by those who committed them, and their findings used to learn and continuously improve the system.

[101] See footnote 14.

the first reference period, is the effective use of civil/military airspace structures. As of the 2nd reference period (RP2: 2015-2019), a third indicator addressing airport/ANS related environmental issues shall be introduced.

The key performance indicator used as the basis for the 'capacity' target is the 'minutes of en-route ATFM delay per flight' as calculated annually by the Central Flow Management Unit. In 2009, a delay of 0.94 minute per flight was achieved (Eurocontrol 2010b: 20). The capacity target for RP1 aims at an improvement of the average delay so as to reach a *maximum of 0.5 minute per flight* in 2014. For the second reference period, a second KPI is foreseen to cover airport capacity issues related to air navigation services.

As regards cost-efficiency, the KPI applied is the 'average determined unit rate for en-route air navigation services'. The performance target is calculated by dividing determined costs for ANS provision by the forecast traffic expected at European Union level. The target consists of a stepwise reduction of the average unit rate from €69.8 in 2009 to *€53.92* in 2014. As from the second reference period, the determined unit rate for terminal air navigation services (encompassing the arrivals and departures to and from airports) will be used as the second indicator to set cost-efficiency targets.

In order to ensure flexibility of performance targets in case of unexpected deviations from the forecast assumptions or unexpected events outside of the control of air navigation service providers, an alert mechanism has been established.[102] For the first reference period, a deviation over a calendar year by at least 10% of the actual traffic recorded or of the actual costs at EU-wide level, compared to the respective forecasts, will activate this mechanism, allowing the European Commission to propose appropriate action, including a revision of targets if necessary.

Assessment of performance plans by the European Commission

Based on the performance indicators listed above, national supervisory authorities of member states were required to submit their national or FAB performance plan to the European Commission by the end of June 2011. Mandatory performance targets at national/FAB level consistent with the EU-wide targets were to be defined for the key per-

[102] See article 18 of the Commission Regulation (EU) No 691/2010.

formance areas of *capacity* and *cost-efficiency* only, as no safety targets were set by the Commission and as the environment target for RP1 is addressed by the Network Management function. The respective performance plan is expected to be available in spring 2012.

On behalf of the European Commission, the Performance Review Body (PRB) of the Single European Sky analyzed the 26 national and two FAB performance plans for consistency with the EU-wide performance targets.[103] Overall, the PRB is satisfied with the punctual adoption and submission of performance plans and with the fact that, collectively, they are "not too far from the EU-wide targets for RP1" (Eurocontrol 2011: 2). Capacity targets reach a 0.76 minute delay per flight, instead of the EU target of 0.5 minute per flight; the collective cost-efficiency target for 2014 falls short of the EU-wide target by +2.4%. However, in most performance plans the PRB has identified opportunities for further improvements in these areas and also expects positive contributions from the activities of the Network Management function. With a view to the second reference period, stronger coordination and cooperation in the framework of functional airspace blocks accompanied by the development of performance plans at FAB level instead of national level is seen to bring additional benefits and provide for better overall consistency. Those member states that will be asked to revise their performance plan based on the PRB assessment have the possibility to do so within two months of the issuance of the respective recommendation, followed by a second Commission review.

First deployment activities in the context of the European ATM Master Plan

Parallel to the ongoing 'development phase' of SESAR, a first implementation package (IP1) is currently being deployed, which is scheduled to be completed by 2013. This first package is intended to introduce first operational improvements to enable the transition from the present fragmented ATM infrastructure to the future harmonized and modernized air traffic management system (European Commission 2009: 2). To a large extent this package consists of ongoing activities in the framework of Eurocontrol. Respective deployment is supported by technical and operational implementing rules and community specifications, defining EU-wide system standards. An IP1 Steering Group was estab-

[103] See Eurocontrol (2011).

lished to ensure a coordinated implementation of the 80 improvement steps foreseen in the package. One of the main challenges is the alignment of IP1 with the investment and deployment plans of air navigation service providers, the more so as the steering group does not possess a legal basis to enforce steering measures (European Commission 2011d: 24f.). As a consequence, the proportion of improvements already deployed, or planned to be deployed, is rather low. The European Commission is therefore going to make proposals to increase the efficacy of the steering group, amongst others by providing "soft enforcement", e.g. by applying the performance scheme (ICB 2011a). Moreover, the Commission has recently initialized a consultation process concerning its propositions for the implementation of an effective governance structure for the official 'deployment phase' of SESAR, expected to start in 2014 (ICB 2011b).

3 CASE STUDY: THE FUNCTIONAL AIRSPACE BLOCK EUROPE CENTRAL (FABEC)

Chapter introduction and summary

In this chapter the case that will be subject to analysis is introduced: the Functional Airspace Block Europe Central (FABEC). As FABEC covers the area with the highest density in European air traffic, FABEC is paramount when intending to establish a functional air traffic management system beyond national borders. Based on overriding SES regulations, FABEC was initialized by a feasibility study, which in a very comprehensive manner outlines the problems associated with the current ATM setup and identifies those areas where further cooperation and integration between FABEC states and ANSPs would be beneficial to the overall ATM system. Institutional models for air navigation service providers and governance options are also discussed. The feasibility study concludes that FABEC is "feasible and necessary" (FABEC 2008a: 113). On the basis of this study, the implementation of FABEC is currently ongoing. First institutional steps were taken by signing a FABEC Treaty and two memoranda of cooperation between national supervisory authorities and air navigation service providers. With regard to the concrete steps of functional cooperation and integration the principle achievements can be observed firstly in the technical domain, where, for example, common specifications have been elaborated on for specific ATM system components, and secondly in the area of training, where bi- and multilateral collaboration has intensified. However, major challenges prevail when looking at airspace redesign and when it comes to finding specific institutional arrangements between air navigation service providers that go beyond simple forms of cooperation.

3.1 Why FABEC?

As discussed earlier, the regulatory framework for the creation of the Single European Sky places an obligation upon EU member states and those third countries associated to the EU by aviation agreements, such as Switzerland, to set up arrangements for the establishment of functional airspace blocks. The states concerned have subsequently joined together in a total number of nine FAB initiatives (see figure 1), which are currently under development albeit at different stages of progress.[104] The initiative chosen for this analysis is the *Functional Airspace Block Europe Central*. It includes the airspace above Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland. FABEC may be considered one of the most significant projects in the Single Sky context. It encompasses the 'core area' of Europe, featuring the highest density of air traffic over the continent and accommodating the majority of busy European airports, such as Paris, Frankfurt, Amsterdam, Munich, and Zurich (FABEC 2008a: 24). With regard to the baseline objectives of SES to increase system capacity and reduce delays while simultaneously enhancing the safety levels, the success of FABEC is critical. In addition, out of the nine FAB programs FABEC is one of the more advanced in institutional terms. Only two north European functional airspace blocks, which are both composed of only two member states, the UK-Ireland FAB and the Danish-Swedish FAB, have progressed further.[105] From a theoretical point of view, the involvement of six states of different size, historical backgrounds, political systems, and membership status in the European Union, may contribute to different perspectives and thus preference intensities in respect of air traffic management integration. Hence, it appears consistent to focus the study on that specific FAB initiative.

[104] See Jarzembowski (2011).

[105] *Ibid.*

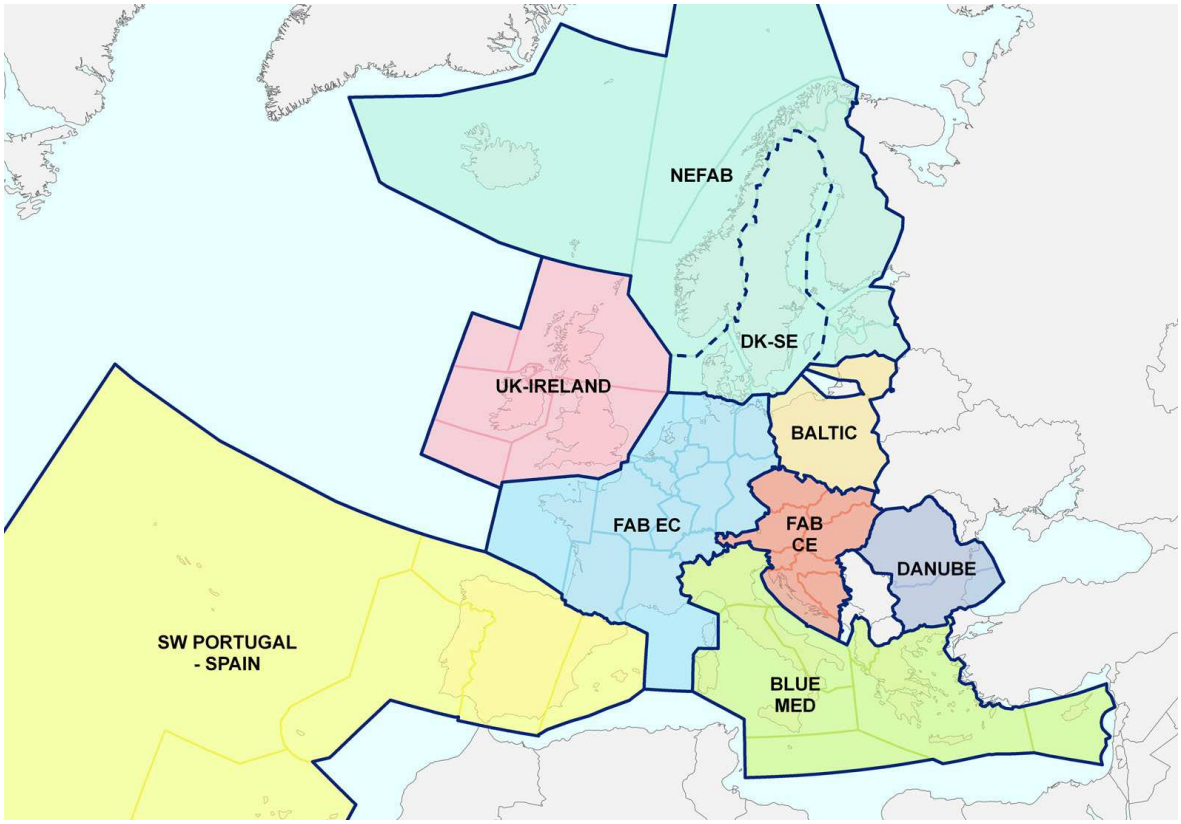

Figure 1: Functional airspace block initiatives in the framework of SES (source: Jarzembowski 2011)

3.2 Current air traffic management in the FABEC airspace

Civil air traffic operating within the FABEC airspace is managed from 14 air traffic control centers that belong to 6 different air navigation service providers (FABEC 2008a: 33). There are 5 national ANSPs providing area control service in their respective airspace, whereas in some cases, services in specified areas are delegated to a foreign ANSP. The Swiss provider, for example, controls more than 40% of its flights in adjacent foreign airspace.[106] The only exception is the Maastricht Upper Area Control Center (MUAC), a multinational center operated by Eurocontrol. With regard to operational/military air traffic (OAT), service provision in some countries is strongly integrated with their civil counterpart; in other countries, organizational separation exists between the two.

[106] See Skyguide (2010): 2.

Country	ANSPs	Civil ACC units	Military ATC
Belgium	Belgocontrol	Brussels	Provided by Belgian Defense in dedicated mil airspace(separated from civil ANS)
France	Direction des Services de la Navigation Aérienne (DSNA)	Bordeaux Brest Marseille Paris Reims	Provided by DIRCAM (separated from, but coordinated with civil ANS)
Germany	Deutsche Flugsicherung GmbH (DFS)	Bremen Karlsruhe Langen Munich	Provided by DFS (except for mil aerodromes)
Luxembourg	L'Administration de la Navigation Aérienne (ANA)	---	---
The Netherlands	Air Traffic Control The Netherlands (LVNL)	Amsterdam	Provided by the Royal Netherlands Air Force in dedicated mil airspace(separated from civil ANS)
Switzerland	Skyguide (Schweizerische Aktiengesellschaft für Flugsicherung)	Geneva Zurich	Provided by Skyguide
Multinational	Eurocontrol/Maastricht Upper Area Control Center (MUAC)	Maastricht	DFS unit collocated to provide ANS to OAT in German MUAC airspace

Table 4: Civil and military air navigation service provision in the FABEC area (2011)

As was elaborated earlier, the current organizational setup of ATM results in a fragmented system in most of the relevant aspects of the domain. Operational concepts and airspace design around national boundaries are not aligned to allow for optimized traffic flows; the diversity of individually procured and maintained technology precludes interoperability and an optimal maintenance and development of technical systems; support and administrative functions are multiplied; training standards are incompatible in some areas, and contingency procedures are only locally applicable. A certain degree of harmonization has been achieved by previously existing regulation and standardization in the framework of ICAO and Eurocontrol, or recently through increasing regulation at EU level by SES implementing rules. This is particularly the case in respect of technological standards, operational procedures, and safety management (FABEC 2008a: 42ff.).

3.3 Initiation of FABEC: The FABEC Feasibility Study

3.3.1 Definition of FABEC objectives

The FABEC program was initialized by a *feasibility study* launched in 2006 and completed in September 2008, involving the civil and military authorities as well as the designated air navigation service providers of the six states. The United Kingdom was also invited as a cooperative partner to ensure connectivity of FABEC to UK airspace and particularly to the high-density airports in the London area. The study is based on the assumption that the predictable future will see a continuous growth in air traffic demand, increasing importance of cost-effectiveness due to pressures from airspace users, the environmental impact of aviation increasingly becoming a significant issue, and – most importantly – the requirement to maintain or even enhance safety levels (FABEC 2008a: 42). The objective of the feasibility study was to identify possible areas of cooperation with a view to addressing these factors and enhancing ATM performance respectively, and to propose an implementation plan towards FABEC (*ibid*., 24). Corresponding performance objectives were defined as a baseline reference to the study. These objectives include the following (*ibid.*, 43ff.):

- Overall safety shall be improved through low-complexity airspace design and procedures and by widespread introduction of advanced controller tools, including planning and conflict resolution assistance as well as monitoring devices used as safety nets; moreover, the uniform application of safety and risk assessment methodologies and an integrated safety management system shall enable comprehensive safety oversight and sharing of experience following safety relevant incidents.
- ATM capacity shall be ensured so as to keep delay at a maximum of one minute per flight, even in the face of growing air traffic; apart from redesigning airspace and increasingly using controller support tools and automation, as under development in the framework of SESAR, this can

be achieved by enhanced coordination of air traffic flows at FABEC network level.

- Horizontal flight efficiency shall be increased by implementing more direct routes to realize a reduction of route extensions by 10 kilometers within FABEC; currently, the FABEC states Switzerland, Germany, Belgium, and France feature excessive route extensions from the optimum trajectory that are mainly associated to airway network design and to the geographical location of military training areas.[107]
- Cost efficiency shall be increased to achieve a 17% reduction in en-route unit rates; this is expected to be possible by generally reducing fragmentation and multiplication of functions in the provision of ANS, whereas the delay costs versus the cost of providing ATM capacity need also to be taken into account.
- The effectiveness of military missions shall be improved; the intent here is to accommodate air force training requirements, accessibility of training areas, and mission readiness status.
- Environmental impact shall be reduced; this is closely connected to horizontal flight efficiency (see above).

3.3.2 Areas of cooperation identified by the study

The feasibility study endeavors to anticipate the developments in the abovementioned areas in both a FABEC- and a non-FABEC scenario, taking into account other improvement initiatives already ongoing, or those which have been scheduled independent from the FABEC program. To fulfill the listed objectives, the study identifies several areas of cooperation that would significantly increase ATM performance in the FABEC area.[108] They are subsequently described in brief.

[107] See Eurocontrol (2008a): 56f.

[108] See FABEC (2008a): 48ff.

Development of a common operational concept

The operational concept is the basis for executing air traffic management functions. It describes by which methods and based on what technology, airspace design, procedures, and information air navigation services are carried out. It covers all operational phases in ATM from strategic planning to tactical air traffic control. Four elements to be addressed in the common concept are put in focus by the feasibility study:

- Common information management, which encompasses the seamless exchange of information between all stakeholders in the ATM system, including airspace users; relevant information includes real-time flight plan data, real-time and predicted air traffic situation, air traffic demand and ATM capacity information, as well as weather information. Using this information, strategic and tactical air traffic management related decisions can be taken in the framework of collaborative decision-making (CDM).
- Common airspace organization and management, involving airspace design regardless of national boundaries, the establishment of cross-border, modular and dynamic military training areas, the introduction of a multiple choice route network with direct connectivity between major airports, and the implementation of cross-border air traffic control sectors to ensure efficient traffic flows.
- Demand and capacity balancing to make best use of overall ATM capacity in the FABEC area, effected by means of centralized air traffic flow management and through realization of modular and flexibly adaptable air traffic control sectors based on traffic demand.
- Common introduction of increased automation in air traffic control to assist the air traffic controller in managing the aircraft under his responsibility; this comprises automated tools designed for conflict detection and resolution, monitoring aids to detect deviations from flight trajectories, data-link communication between air traffic control and flight crews, and, in the longer term, anticipated traffic synchronization and deconfliction.

In the framework of the feasibility study, a step-by-step implementation plan has been developed to realize the common operational concept over the entire FABEC evolution phase.[109]

Airspace design at FAB level

As was indicated above, a commonly agreed airspace design is one of the crucial enablers of a functional airspace block. It is the prerequisite for an optimized airway network and allows for the establishment of cross-border air traffic control sectors in accordance with traffic flow demands and to put sector boundaries including handover points in areas of low complexity. It facilitates placing military training areas in a manner compatible with the civil ATS route structure; evidently the integration of military stakeholders, both in the study and in the entire FABEC program, is vital in order to achieve a workable solution in this respect.

The feasibility study shows that there is room for improvement in the cross-border route network design in terms of horizontal flight efficiency. It can even be enhanced further by coordination with adjacent FABs. One major issue of the study proved to be the definition of military training areas that accommodate the operational requirements of national air forces. The intention to locate such areas in so-called 'white spots', areas of lower civil traffic density, appears inconsistent with military needs. The study stipulates that "a balance between civil and military requirements needs to be established" (FABEC 2008a: 57).

The feasibility study also looks at various options of designing air traffic control sectors. The goal is to arrange control sectors in such a way that traffic flow patterns and flight profiles are taken into account and traffic loads are manageable in a safe and efficient manner. A modular and flexible approach to sector layout will be required when considering the implementation of so-called 'tailored routes' that allow airspace users to choose their preferred flight trajectory according to operational and meteorological requirements, as opposed to using a fixed airway structure. One of the main challenges here is that in an established route network the number of conflict points is controllable, whereas a user-preferred routing system would result in a multiplication of conflicts that

[109] See FABEC (2008a): 86ff.

are difficult to anticipate, thus requiring respective conflict detection tools to render them manageable.

In the study framework, three transnational hotspot areas within FABEC featuring high traffic density and complexity were addressed and concepts developed with regard to airspace and sector design.[110] These concepts could be implemented as a short-term measure and as a first step to a more comprehensive reorganization of airspace. They would allow for a reduction of complexity and conflicts and for a more balanced distribution of sector workload. One precondition to airspace optimizations of this kind is to reduce incentives to airspace users to plan their routings through controlled airspace with lower en-route unit rates. This would imply a certain alignment of the significantly diverging en-route unit rates of air navigation service providers (see figure 4).

Common technical approach

Another relevant area of cooperation to reduce fragmentation and increase ATM performance is the technical domain. The feasibility study identifies several opportunities in the areas of specification of functional and non-functional requirements, procurement, development and maintenance service of common technical (sub-)systems, including training. Respective cooperation is essential to be able to attain the level of interoperability and automation within FABEC in accordance with the common operational concept. Moreover, this will provide the possibility to pool technical expertise available in the different air navigation service providers and to create the leverage required to foster the relevant technological developments in the ATM supply industry. A technical systems roadmap[111] has been integrated with the abovementioned implementation plan of the common operational concept. One of the challenges is to ensure a smooth migration from the current technical framework to the advanced system landscape of the future, thereby progressively accommodating the evolving operational requirements and technological possibilities. The study also emphasizes that these efforts need to be in line with the SESAR program.[112]

[110] See FABEC (2008a): Annex D.

[111] See FABEC (2008a): Annex E.

[112] See sub-section 2.2.4.

Common safety management

According to the feasibility study, a common FABEC safety management system (SMS) is closely linked to the institutional model of ANSP cooperation.[113] Currently, each air navigation service provider has its own safety certificate under SES regulations, with responsibilities that cannot be shared. A common SMS will only be possible as soon as institutional arrangements allow for the centralization of ANSP functions. Nevertheless, the study proposes to begin preparations for a common safety management structure through various stages, starting off with a FABEC Safety Management Office, which incrementally could take over additional safety functions with increased ANSP cooperation.

Common charging

As indicated above, the current differences in cost structures and consequently en-route unit rates (see figure 4), as well as the distribution of route charges between air navigation service providers, may constitute a hindrance to implementing a functional airway network, since they create an incentive to airspace users to proceed along the 'cheapest' route, as well as an incentive to ANSPs to ensure keeping routes within their area of responsibility, thereby competing for traffic. One option consequently proposed in the feasibility study is to establish a single charging zone for the entire FABEC area, implying a single unit rate, and to divide the collected revenues among the participating ANSPs in the ratio of their individual cost bases. An identified problem with such an arrangement is that airspace users predominantly operating in relatively 'cheap' airspace today would be disadvantaged, as the single unit rate is expected to be higher on average. It is thus suggested that mechanisms be found for a certain convergence of unit rates. Furthermore, disparities in national taxation and charging exemption rules need to be taken into consideration. In any case, the feasibility study proposes that the single charging zone should be implemented before introducing operational improvements in airspace design.

Cooperation in the area of training

Alongside with increased cooperation and integration in the operational and technical domains, it will become necessary to develop common training standards and a common

[113] See sub-section 3.3.3.

training organization. The feasibility study recognizes opportunities to increase staff mobility across FABEC, also in respect of job attractiveness. Training cooperation is seen as an evolutionary process following integrative steps in other areas. It may range from sharing of information and materials, through definition of common recruiting and selection standards, development and definition of common course and training contents, the use of standardized training tools such as simulators to implementing a single training organization. However, the provision of training services from one single FABEC unit is not advised, in order to retain the connection to local operational units which ultimately are the 'customers' of training. This is to ensure the sufficient availability of instructors and to possibly enable the distribution of specific competences among various training units.

Common aeronautical and meteorological information management

In the framework of the feasibility study, integrated FABEC concepts were developed with regard to both aeronautical information services (AIS) and meteorological services (MET). The study concluded that a combined networked and centralized approach featuring coordinated data collection at the local level whilst carrying out the harmonization, production and distribution of data centrally would be favorable; this would ensure the correct availability and integration of information in accordance with the requirements provided by the common operational concept.

Common contingency management

The feasibility study also looks into the possibility of creating common procedures in case of disruptive events that could result in the failure of one or several air traffic control units, or in the unserviceability of respective airspace. Benefits from cooperation in this area are mainly expected in terms of the potential for continuously ensuring service provision, albeit at a lower overall capacity level. According to the proposed contingency concept, this could be achieved by making available 'regional' backup facilities that would each serve a specific number of air traffic control centers. Such a solution, however, would require alignment of technical center infrastructures.

3.3.3 Options for ANSP cooperation

In order to be able to fully exploit the possibilities for cooperation and integration, the FABEC feasibility study investigates the various options of establishing new institutionalized structures for air navigation service provision in the FABEC area. Five possible levels of cooperation between ANSPs – increasing from one level to the next – were defined (FABEC 2008a: 75ff.):

Level of coop.	Institutional model	Legal and financial status of ANSPs	Decision-making status of ANSPs	Level of functional cooperation
1	*Exchange of information*	Independent	Autonomous	Mutual exchange of information in all relevant areas
2	*Coordination*	Independent	Autonomous	Joint coordination of plans
3	*Contractual cooperation*	Independent	Cooperation and joint decision-making in specified areas	
4	*Integration (‘alliance model’)*	Creation of joint organizations in specified areas		
5	*Consolidation*	Single supranational air navigation service provider		

Table 5: Possible options for ANSP institutional models in FABEC

As shown in table 5 above, full financial, legal and decision-making autonomy is retained at cooperation levels 1 and 2. At the third level of cooperation, ANSPs agree to take joint decisions in specific areas, while still remaining autonomous organizations. No formalized joint structures are created here. However, at the fourth cooperation level ANSPs establish common organizational structures in specified domains, resulting in a partial loss of autonomy in those areas. The study refers to this level as the ‘alliance model’. The number and/or quality of functional areas integrated within such joint structures may gradually increase. Finally, the ‘consolidation’ level corresponds to a single air navigation service provider, or to a supranational organization that owns the national air navigation service providers. Hence, no autonomy rests with individual ANSPs. However, it is possible that certain ATS functions may not be integrated into FABEC, such as local aerodrome control services.

As the formation of institutionalized cooperation structures is only necessary for levels 3 to 5, only these three cooperation levels were further analyzed by the FABEC feasibility study (FABEC 2008a: 76). The study concludes that most of the improvement areas identified do not necessarily require the establishment of centralized executive units, but can be implemented by each individual ANSP following a joint decision. However, there are exceptions, such as air traffic flow and capacity management (ATFCM), or when intending to centralize ancillary and support functions or to establish joint ATS units, namely common air traffic control centers. Consequently, the alliance model would support all improvement opportunities, as it is able to allow for both pure joint decision-making and institutional integration of specific functional areas. The feasibility study thus proposes a gradual increase of cooperation, beginning with a contractual cooperation situation to generate first improvement possibilities, and to subsequently move towards an alliance model that would enable a continuous development of the number and quality of functional areas managed centrally. Finally, a single ANSP may add to the potential for increasing overall ATM performance and hence might become an optional final step of this evolutionary process. Given the vast institutional changes associated with the single ANSP model, it is not considered realistic as an immediately available scenario. The study displays a rough roadmap of a possible integration process and suggests attaining a functional alliance structure for FABEC by 2013.

The study develops three possible options for military ANSP involvement in a cooperation structure as previously described: a ‘minimum’ model, based on harmonization of rules and procedures; a ‘pragmatic’ model, involving close partnership between civil and military ANSPs; and a rather visionary ‘optimum’ model, where civil and military air traffic management are integrated in one ANSP (FABEC 2008a: 84). According to the study, military ANSPs would consider any of these options feasible as long as the military requirements can be fulfilled in accordance with state obligations.

3.3.4 State governance

Any ANSP cooperation model needs to be embedded in a formalized governance structure at nation state level as air traffic management remains a sovereign function, especially when considering military involvement. This implies the establishment of a high level policy body composed of civil and military state representatives related to air traffic management. This body shall, amongst others, be responsible for coordinating approval of changes to airspace design, or defining common policies on airspace management, air traffic flow and capacity management, and airspace classifications (FABEC 2008a: 92). For the ANSP alliance model, the study envisages a coordination structure of the following kind (*ibid.*, 85):[114]

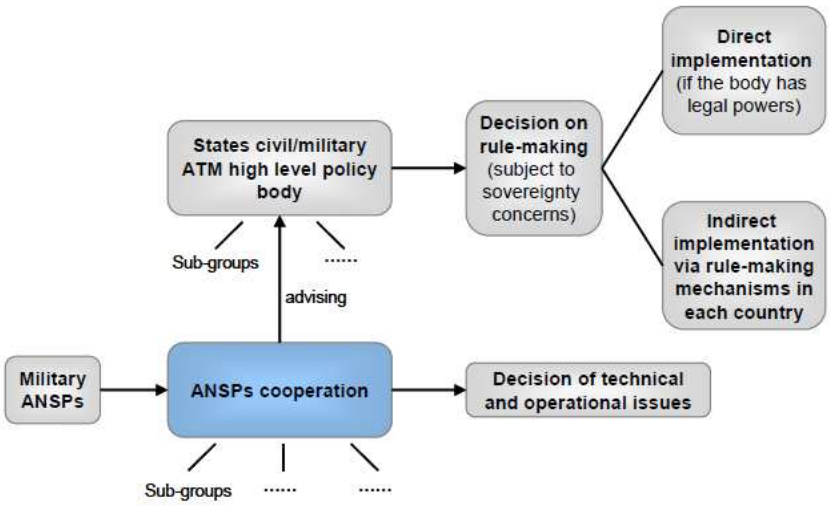

Figure 2: Possible coordination structure assumed for an ANSP alliance model

[114] For alternative options of FABEC governance structures, including their advantages and disadvantages, see Pötzsch (2009).

Further elements have been identified as enablers and preconditions to be ascertained by FABEC states (FABEC 2008a: 92f.). To allow for transnational air traffic services, states are advised to approve cross-border ATS delegation agreements between designated national air navigation service providers and to permit military ANSPs to enter such agreements. A liability regime needs to be established to cover for damage from accidents and incidents in delegated airspaces. National license specifications for ATS staff require harmonization. A FABEC-wide harmonized supervisory regime has to be implemented, implying increased cooperation between national supervisory authorities. Moreover, a common 'Just Culture' philosophy should be pursued to provide a sound basis for sharing experiences and learning from safety relevant incidents.

3.3.5 Performance assessment for FABEC and conclusions of the feasibility study

Expected FABEC performance was assessed and compared against the objectives stated earlier.[115] In addition, a cost-benefit analysis was carried out, taking into account a reference case where integration in the framework of FABEC would not be realized, but current improvement initiatives continue. Overall, the study concludes that all the FABEC long-term objectives can be met in all areas if pursued. This particularly applies to the areas of capacity and flight efficiency and thus in regard to environmental impact reduction. Also the cost-benefit analysis is positive. Airspace users are expected to benefit indirectly from synergies and general defragmentation in air navigation service provision, and directly from increased capacity and reduced delays brought about by FABEC (FABEC 2008a: 98ff.). The final conclusion of the feasibility study is that FABEC is "feasible and necessary" (*ibid.*, 113).

[115] See sub-section 3.3.1.

3.4 Implementation of FABEC (as of October 2011)

3.4.1 Organizational and institutional framework

After completion of the feasibility study end of June 2008, the FABEC project setup established for the purpose of elaborating the study was adapted to be able to continue the work along the proposed implementation plan. This organizational structure has been partially amended as of 19 October 2011 (see below). Until then, overall strategic direction for FABEC development was provided by the *High Level Implementation Board* (HLIB), composed of the national directors general of civil aviation and their military counterparts, as well as of the chief executive officers of the air navigation service providers. The HLIB was politically guided by the *States Strategic Board* (SSB), which only included the respective state representatives. The *FABEC Project Steering Group* (FPSG) consisted of the relevant strategic advisors at state and ANSP level and had both a coordination and support function on behalf of the HLIB. Several task forces were created to address the various topics in the project; specialized state task forces were concerned with those aspects related to sovereignty, such as ANSP supervision or liability. They worked under the authority of the *6 States FABEC Group* (6SFPG), involving the strategic advisors at state level only. The technical and operational task forces and working groups have not been replaced by the new structure. They report to *Standing Committees* (SC) established for each relevant ANSP management domain (safety, environment, operations, technical, human resources, finance, and legal/institutional). These, in turn, are subordinate to the *ANSP Strategic Board* (ASB), which is composed of the CEOs of the participating air navigation service providers, and offers strategic guidance in these areas.

On 18 November 2008, the civil and military state representatives signed a declaration of intent[116] to establish a functional airspace block in accordance with the proposals made in the feasibility study and with the aim of improving the overall ATM situation in the FABEC area. It stipulates the intention to draft an agreement between FABEC mem-

[116] See FABEC (2008b).

ber states by 2010 in order to create a flexible institutional framework within which the continuous and gradual evolution of FABEC in line with commonly agreed steps of integration should take place (article 13). The declaration of intent stresses the fact that national sovereignty, with regard to national airspace and the responsibilities of states in respect of supervision, security, and defense matters, remains unaffected (article 2f). On the same date, ANSP representatives signed an *ANSP Framework Agreement*[117] in order to be able to implement the first step of institutionalized ANSP cooperation as proposed in the feasibility study.[118] In December 2009, the agreement was complemented by a common tendering procedure.[119]

The *FABEC Treaty*[120] – as envisaged in the states' declaration of intent – was signed in Brussels (Belgium) on 2 December 2010. This treaty formally establishes the Functional Airspace Block Europe Central and defines a state governance structure in the body of the *FABEC Council*. The treaty explicitly does not create an international organization with international legal personality (article 2.2) and does not intend to affect the sovereignty of contracting states (article 4). However, it places an obligation upon states to commit themselves to cooperation in all areas considered to be relevant for the successful implementation of a functional airspace block.[121] It further defines the framework for institutional, technical and operational arrangements in regard to air navigation service provision. It does not, however, define any specific options to be followed in this respect. In a more concrete manner, article 30 of the treaty establishes a liability regime and regulates the relevant compensations in case of damage sustained in the course of air navigation service provision. Disputes between contracting states relating to the provisions in the treaty are to be referred to the FABEC Council, or, if no solution can be found, to arbitration (article 32). The FABEC Treaty is currently undergoing the ratification process, the completion of which is expected by 2012.

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[117] See FABEC (2008c).

[118] See option 3 in table 5.

[119] See FABEC (2010a).

[120] Treaty Relating to the Establishment of the Functional Airspace Block "Europe Central" between the Federal Republic of Germany, the Kingdom of Belgium, the French Republic, the Grand Duchy of Luxembourg, the Kingdom of the Netherlands and the Swiss Confederation.

[121] See sub-section 3.3.2.

On 27 January 2011, the national supervisory authorities of the six FABEC states signed a memorandum of cooperation[122] with the aim of strengthening their cooperation and enabling proactive exchange of information, particularly with regard to oversight over integrated and cross-border functions within FABEC.

In May 2011, the directors general of civil aviation of the six FABEC states adopted the *Declaration of Matterhorn*,[123] requiring the ANSPs to deliver a common 'Airspace Plan' to increase ATM performance in the upper and lower airspace, particularly between major hub airports. ANSPs are also requested to address the diverting evolution of ANSP operating costs and to define measures to minimize the differences. Moreover, the declaration announces the establishment of a provisional FABEC Council until the FABEC Treaty comes into force and the introduction of a financially and functionally independent *FABEC States Bureau*, including a *Permanent Secretary*, to support the Council.

The *FABEC Council*, the governing body of FABEC established by the treaty, is tasked to ensure the implementation of the treaty and the fulfillment of the general FABEC objectives (article 22 of the FABEC Treaty). It is composed of one civil and one military representative of each contracting state. Decisions in the FABEC Council have to be carried by all states (unanimous vote according to article 23.2). Four standing committees, the *Airspace Committee*, the *Harmonization and Advisory Committee*, the *Financial and Performance Committee*, and the *National Supervisory Authorities Committee*, assist the Council in its work. An *Air Navigation Service Consultative Board* provides the link to the air navigation service providers in the FABEC area. As noted above, this organizational structure was implemented on 19 October 2011 on a provisional basis, in anticipation of the final ratification of the FABEC Treaty.[124] The new bodies have replaced the SSB, the HLIB, and other committees with state involvement. In addition, the FABEC States Bureau was established. The organizational setup at ANSP level remains unchanged for the moment.

[122] See FABEC (2011b).

[123] Document available from the author; no public dissemination.

[124] See FABEC (2011f).

3.4.2 Technical work

In the framework of the various task forces established by the project organization, work is being pursued in the operational, technical and institutional domains which are to be further developed within FABEC. On the operational side, a strong focus is put on airspace redesign, also with a view to enabling short-term benefits to airspace users (see figure 3). The cross-border high complexity hotspots originally identified in the feasibility study were redefined and the scope of work broadened to include, for example, the Channel interface towards airspace of the United Kingdom and a simplified and more effective airway network during the night with lower traffic volumes.[125] The latter was implemented in 2010. One important element with regard to civil-military cooperation is the endeavor to establish large-scale cross-border military training areas (CBAs) that will possibly allow removing those which are currently located in less favorable positions in terms of civil traffic flows. 'Most penalized city pairs' have been determined with the objective to introduce more direct routings between major airports, where airlines today have to face significant detours due to inefficient route structures. First improvements have been achieved for the city pair of Paris and Munich.[126] Based on the state mandate of the Declaration of Matterhorn to develop a common Airspace Plan, the FABEC ANSPs presented a respective concept in September 2011.[127] According to this, a 'free-route airspace' shall be established over the greatest possible FABEC area, connected to the fixed-route network by a 'transition airspace', particularly linking the 'top 5' terminal control areas of Paris, Frankfurt, Amsterdam, London, and Munich. The framework conditions for implementation of this airspace strategy are yet to be defined and will touch on a number institutional, legal and financial issues related to cross-border operations. Furthermore, the harmonized application of the Flexible Use of Airspace concept between civil and military airspace users, including priority rules, will be required. All current and future airspace design pro-

[125] See FABEC (2009).

[126] See FABEC (2011c).

[127] See respective letter of 26 September 2011 from the Vice Chairman FABEC ANSP Strategic Board (ASB) to the FABEC Council members; available from the author.

jects are to be evaluated against the new strategy. The detailing of the framework conditions and of the implementation roadmap is expected by February/March 2012.

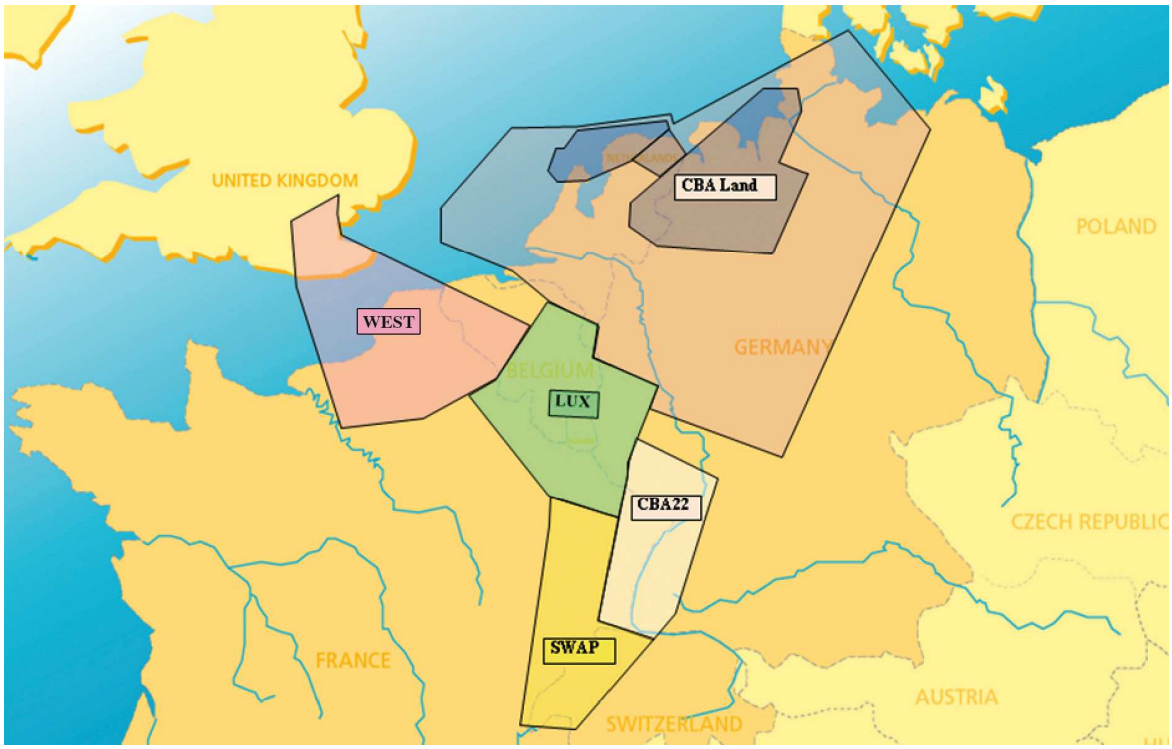


Figure 3: Current FABEC airspace redesign projects (source: FABEC 2011d)

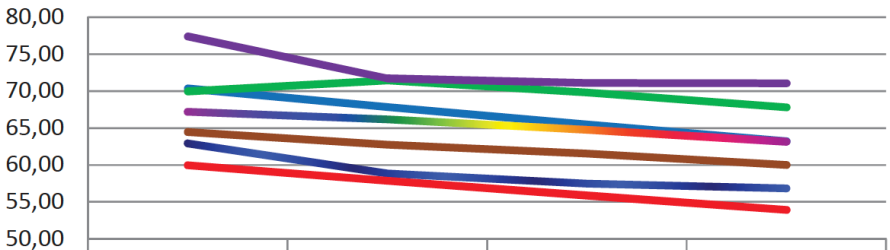
In the technical domain, work is ongoing in the areas of voice and data-link communication, surveillance, and data management; this includes efforts towards a common FABEC data and information infrastructure and towards enhanced interoperability of flight plan data processing systems. For example, the French provider DSNA and Maastricht UAC are introducing a common voice communication system based on common FABEC specifications.[128] In mid-2010, a cooperation agreement on basic training for air traffic controllers was established, offering the possibility to jointly provide training in line with common training standards and to coordinate available training capacity.[129] Another relevant area of work is the possible implementation of a common FABEC air traffic flow and capacity and airspace management (ATFCM/ASM) function. A live trial was conducted in summer 2011; however, despite several lessons learned in terms of procedures and tool functionalities, it is still unclear whether establishing a separate ATFCM function for FA-

[128] See FABEC (2011e).

[129] See FABEC (2010b).

BEC beneath the respective Eurocontrol structure is appropriate, as it only may constitute an additional coordination layer.[130] In March 2011, FABEC received a €13.8 million funding in the framework of the European Union TEN-T (Trans-European Transport Network) fund to financially support specific FABEC activities.

In compliance with the Single European Sky Performance Regulation, a FABEC performance plan was elaborated, setting performance targets in the key performance areas of 'capacity', 'environment', and partially 'safety'. As no single unit rate is established within FABEC, the cost-efficiency KPA was addressed by the respective national performance plans (see figure 4). The assessment by the Performance Review Body of the Single European Sky established that the FABEC delay target is not sufficiently consistent with the EU-wide capacity target for 2014 and lacks the specification of accountabilities of individual air navigation service providers as to their contribution to capacity performance; moreover, capacity improvement potentials through cooperation within FABEC were not addressed.[131] The plan will have to be revised accordingly.



	2011	2012	2013	2014
Belgium/Luxembourg	70,34	67,86	65,47	63,21
France	64,48	62,78	61,54	59,99
Germany	69,97	71,42	69,81	67,82
The Netherlands	62,94	58,86	57,47	56,84
Switzerland	77,40	71,71	71,11	71,06
FABEC	67,19	66,21	64,79	63,16
EU-wide target	59,97	57,88	55,87	53,92

Figure 4: Determined target unit rates (in €) of FABEC members in RP1 (source: FABEC 2011a: 44)

[130] See Genao (2011).

[131] See Eurocontrol (2011).

3.4.3 Overall implementation status of FABEC

According to the FABEC newsletters[132] and internal progress reports,[133] main achievements with regard to cooperation in the FABEC context can in particular be observed in the domains related to technical developments and training (see above). On the other hand, most issues blocking further advancement appear to be present in the areas of airspace design and in terms of concrete steps of functional integration. According to the recent progress reports, the two airspace redesign projects that are close to the implementation phase show a 'red' project status. No additional thrust is visible from the 'free-route' airspace strategy, which is still in a very conceptual stage of development.

[132] Available online at www.fabec.eu.

[133] Available from the author; no public dissemination.

4 METHODOLOGICAL APPROACH

Chapter introduction and summary

In order to be able to establish the most influential variables affecting the development of FABEC integration, the hypotheses stipulated in section 1.4 are subjected to empirical testing. The corresponding research design is described in this chapter. It also includes both the operationalization of theoretical concepts and the instructions of how to acquire the relevant data sets to conduct the analysis. While testing of the 'liberal-intergovernmentalist' hypotheses is based on inter-state comparisons at one specific point in time, referring to the period at and after the date of signing the FABEC Treaty (including present time), the 'supranationalist' hypothesis requires the comparison of timeframes that are defined by the two main legislative packages SES I and SES II. It is believed that by assessing controversial theoretical approaches and thus influencing factors, internal validity of the study is sufficiently high, whereas the specificity of the domain under investigation limits the generalization of findings. Due to their multi-dimensionality, operationalization of the various theoretical concepts partially bears a significant complexity. Because a major part of indicators is perception-based, data acquisition is largely conducted through an online interview with those stakeholders that are by their role generally accredited substantial influence on the progress of FABEC integration. On the other side, European Union treaties and legislation are the sources of information examined to determine EU competences and activities in the field of air traffic management.

4.1 Research design

4.1.1 Procedure for hypothesis evaluation

To develop the research design for this study, an assessment is required as to whether the theoretical concepts put in relation by the hypotheses are to be measured at the national, regional or European level, and whether the proposed relationships can be evaluated by cross-sectional or longitudinal analysis. In respect of the two liberal-intergovernmental hypotheses 1a and 1b, *domestic societal influence* and *governmental bargaining power* are situated at the level of nation states. Consequently, the evaluation of these hypothetical relationships can be conducted by inter-state comparison between FABEC members at a single point in time. In other words, the national status in terms of domestic group influence and governmental bargaining position are simultaneously assessed in selected FABEC states and compared against the measured values of the respective dependent variables, *governmental preference intensity* and *level of FABEC integration*. As was shown earlier, only a FABEC Treaty is available for the time being, without any subsequent functionally relevant steps of integration. Thus the level of integration can at present only be determined from an *institutional* perspective. Hence, the obvious moment of comparison is the timeframe encompassing the signing of the FABEC Treaty. To obtain more clarity about the reasons behind a specific institutional outcome, the different stakeholders' *functional* views on how much integration in terms of consolidation of ANSPs, air traffic control infrastructure, and ANS supervision they would like to see, are also appraised. This should enable the estimation and prediction of the integrative potential present in FABEC.

The European Union is the unit of analysis in the third hypothesis derived from supranationalist theory, as it represents the supranational organization setting the regulatory framework for the functional airspace block initiatives, and consequently also for FABEC. Hence, supranational influence on the integration process at FAB level can only be evaluated over time. Hypothesis testing will therefore be conducted by comparing variables in two subsequent timeframes. As was shown earlier, the Single European Sky has seen two major regulatory output phases: the initialization of the program by the SES I package in

2004, and an adaptation and intensification phase following SES II legislation in 2009. It appears practical to choose these two legislative peaks as basis for comparison as they mark the beginning of periods with increased regulatory activity in favor of integration. The hypothesis suggests that the advancement of integration by the European Union is amplified even without adding competence or autonomy to the supranational organization. This means that, with regard to the independent variable, *regulatory autonomy of the European Union* needs to be assessed at the time of agenda setting and adoption of the respective SES regulations;[134] the dependent variable, i.e. the *density of supranational regulation*, will be looked at within the timeframe covering the entire validity period of the SES I legislative package until the SES II legislative package came into force, and the validity period of SES II legislation from this point until present time.

The result of this hypothesis evaluation is expected to demonstrate whether the proposed relationships are valid in the context under analysis, and which attitudes and positions – including go or no-go factors in respect of FABEC integration – appear to be most salient. These positions can subsequently be put in relation to and assessed against the Commission's integrative intentions, which ultimately permits an evaluation of the feasibility and efficacy of the FABEC initiative.

4.1.2 Internal validity

As the analysis of empirical data is based on past situations and events, a non-experimental ex-post-facto design is applied, combining cross-sectional and longitudinal analysis. The main shortfall of ex-post-facto designs is their potential lack of *internal validity*. Internal validity refers to the possibility to eliminate influencing factors which may have an effect on the dependent variable under study, other than those already taken into account. Unlike experimental designs, ex-post-facto studies do not allow for the systematic exclusion of third variables. It is therefore difficult to assess whether a determined effect can in fact be attributed to the examined circumstances.

[134] Note that regulatory autonomy of the Commission during SES implementation is based on respective SES regulations.

Processes of political integration are highly complex and subject to a large variety of different influencing factors. This becomes apparent when considering the numerous theoretical strains which try to explain this phenomenon. Influencing variables may also differ from issue area to issue area. In order to obtain the results required to be able to respond to the research question, it is essential to cover as many integrative factors as possible that are relevant in the domain of European air traffic management. As stated earlier, not only the variables favoring integration are thereby to be taken into account, but especially those that may be hindering to the progress of integration.

Political integration is the result of a series of political decisions that are taken at the national as well as at the inter- or supranational level. Since integration always implies the transfer of national competences to a supranational body, there is a requirement for governments of respective nation states to, at some point, agree to specific integrative steps. In pluralist democracies, which constitute the prevailing political system in the geographical area relevant to this study, a domestic preference building process will precede government decisions related to an international topic. This process of preference formation will mainly involve those societal actors who have an interest or stake in the policy area under discussion. In the very specialized field of air traffic management, a certain expert knowledge is required to understand the specific needs, conditions, and implications of cooperation and integration. There is thus a high probability that those actors who combine interests and specialized knowledge in the domain of ATM will be most active in attempting to control policy decision outcomes. The research design employed here allows for full consideration of relevant stakeholders. It also intends to differentiate between actors in terms of influencing capability, which is supposed to provide an indication as to the most prominent interested party in this domain. Consequently, it is important to make good use of this design capacity. Selection of stakeholders to be subjected to analysis is critical to obtain significant and comprehensive results.

Next to domestic civil society, the proposed research design also takes the nation states' governmental level into account, where first political decisions are taken in terms of international cooperation and integration. Comparison with the civil society level allows for the evaluation of domestic interest groups' factual impact on these processes and compensates for potential differences between nations in that regard. Government positions may

also be expected to reflect any previous decisions taken by a national legislative or judicial body that are pertinent to the respective cooperation/integration initiative, as well as additional societal influences or nationally relevant interests not incorporated in the study. National governments can thus be seen as aggregation points of domestic opinions and therefore promise to be an efficient and valid source of information. Moreover, by considering the negotiation power of nations, governmental positions on integration are qualified in terms of their potential of finding their way into international cooperation or integration agreements, adding a further potential element of influence.

Finally, the research design also puts in focus the supranational organization and its contingent capacity to advance integration independently from national influences. The objective is to examine to what extent the European Union can be seen as an autonomous actor promoting functional and community interests towards international policy coordination and integration. The third hypothesis[135] suggests that the EU does not necessarily require additional competences transferred by member states in order to bring about an enhanced level of integration in the field of air traffic management. It is thus based on the assumption that there are in fact other variables at work, however none that is directly influenced by national governments. These variables would include existing path dependencies in the decision-making process as well as other factors emanating from the supranational level. A further specification of such factors is not required as they are not relevant, particularly since this analysis is based on the notion that the European Union is always a promoter of integration. Any obstructive trends are therefore expected to appear at the level of nation states and/or domestic actors. In sum, the proposed research design covers an extensive number of potential influencing factors and thus enjoys a high degree of internal validity.

4.1.3 External validity

The assessment of *external validity* aims to determine whether the results of this study are universally applicable. As the present analysis involves a specific case study, it will not be possible to gain any insights from a statistical viewpoint that would be open for generaliza-

[135] Hypothesis 2; see section 1.4.

tion. Moreover, the specificity of the policy domain and the actors involved will exclude generalized conclusions.

Air traffic management is a policy area with several potentially conflicting perspectives. On one hand, there appears to be general agreement that today's ATM system is too fragmented and requires far-reaching harmonization and integration in order to cope with the future air traffic demand. Air transport is a highly important economic factor, ensuring global mobility of persons and goods. Even temporary interruptions of air transportation over a larger geographical area have an immediate and substantial impact on worldwide economy, as could be seen after the eruptive activity of Iceland's volcano Eyjafjallajökull.[136] Air traffic management thus needs to be able to continuously fulfill its task as one of the basic enablers of air travel. On the other hand, due to its sovereign nature, the control of airspace is a politically sensitive issue. Besides, it is based on an infrastructure which has grown historically within a national context. Integration and cooperation at European level may require breaking up traditional structures, which may create defensive reactions amongst the actors and organizations concerned. In addition, as stated before, the policy area of ATM is a very specialized domain, which is generally not open to the public and requires in-depth expertise to be fully apprehended in all its facets. It is of noticeably high complexity and of a safety critical nature. Any solutions need therefore to be exceedingly reliable and functionally realizable. This implies that normally only those actors who have the required knowledge and expertise at their disposal will be implicated.

Both societal actors' influencing and governmental negotiation power and the regulatory autonomy of the European Union largely depend on the characteristics of the issue area under examination. Furthermore, negotiation power is up to the nation states involved. The same applies to the influencing potential of interest groups. It is very unlikely that any other policy area will feature the same conditions and specific properties as the air traffic management sector. They may also differ between functional airspace blocks, whereas certain similarities between stakeholders' positions are still to be expected. It is therefore advisable to mainly restrict the final conclusions of this study to FABEC, but to use them indicatively for other FAB initiatives.

[136] See Oxford Economics (2010).

4.2 Operationalization and methods of data acquisition

In this section, the dependent and independent variables incorporated in the hypotheses outlined in section 1.4 are operationalized and thus defined in measurable terms. Operationalization of the independent variables is based on the theoretical concepts specified in section 1.3. Alongside, the methods by which the respective indicators are measured will be described.

4.2.1 General considerations on methods of data acquisition applied in this study

The two principal methods used to acquire data relevant to this analysis are the qualitative examination of legal documents (treaties, international agreements, and EU law) and structured stakeholder interviews by means of an online questionnaire (see Appendix) with subsequent qualitative analysis of responses. The main reason for the latter choice is that the theoretical concepts used in this study put a strong focus on the relevant actors involved in processes of integration. This applies in particular to liberal-intergovernmentalism where domestic societal actors and their preferences stand to the fore. As will be shown during operationalization, most of the dimensions of the independent variables heavily depend on individual perceptions. The best way to capture these perceptions is to retrieve them directly at the source. However, the challenge of this research project is that continuous developments are taking place in the process of this study. Although an ex-post-facto design is applied, the reference point chosen is always only an intermediate step of an ongoing evolution. The difficulty is to find the ‘correct’ point of measurement. Yet, if information about perceptions and positions is made available, they may be expected to remain stable over a longer period of time. National or organizational interests will normally not change overnight. Moreover, political integration is a long-term process requiring a clear strategy and vision of stakeholders if intending to shape respective outcomes in accordance with their own conceptions. This permits a certain predictability of developments although the examination is focused on past and present events. The same advantage applies using legal frameworks as basis for analysis. Current laws lay the foundation and provide the direction

for future progression in a specific regulated domain. As a consequence, the basic data sources and acquisition methods chosen for this study to some extent promise to accommodate the dynamic nature of the object under investigation.

Nevertheless, stakeholders may – for different reasons – be reluctant to provide information on matters that have not reached final settlement yet, or which, in their eyes, may be too sensitive to be communicated at this stage of development. In respect of hypothesis testing, this study thus aims at obtaining the corresponding information from at least three FABEC nations of which one of larger size, one smaller EU member state, and Switzerland, a non-EU member, are taken into account to attain some degree of variance between compared nations and to enhance overall representativity. This particularly applies to hypothesis 1a referring to domestic stakeholders and national preferences. Obviously, the best would be to acquire the respective information from all FABEC states in order to be able to capture the full picture as to involved actors' opinions. However, as will be shown later, not all stakeholders have provided their views during the data acquisition phase. This can be partially compensated for by the consolidated national preference intensities relevant for hypothesis 1b, which ultimately are of greater interest to the present study. Consequently, bargaining power should be assessed for as many FABEC nations as possible to get a complete basis for comparison with regard to the FABEC level of integration. Minimally, preference intensities of France, Germany, the Netherlands, and Switzerland must be obtained, as neither Belgium nor Luxembourg are expected to outweigh the other FABEC states in respect of bargaining power considering their size, location, and situation in respect of ATM; it therefore does not seem problematic to be missing their views. Where necessary and possible, information is complemented by analyzing official documents or secondary data from which the position or line of action of national governments can be derived.

4.2.2 Level of integration

In the context of this study, the 'level of integration' relates to the Functional Airspace Block Europe Central (FABEC) and constitutes the most pertinent dependent variable. When introducing the term *political integration* it was maintained that integration processes involve the transfer of decision-making power from individual nation states to a supranational organization, and that this transfer may take effect along three separate dimensions: vertically (the degree of decision-making power), sectorally (the number of policy areas), and horizontally (the geographical scope).[137]

Vertical dimension

The *vertical* dimension includes the procedural aspects of decision-making as well as the enforceability of decisions. Decisions at the supranational level to be taken unanimously allow every member state to veto a specific outcome. Consequently, supranational policy will only be successful if consensus exists between states as to its content, taking into consideration each nation's individual interests. Normally, decisions with implications of greater magnitude will be difficult to achieve under such circumstances, especially if national interests differ significantly, and will result in the lowest common denominator. On the other hand, decisions based on the majority principle require member states to compromise, since a majority of members is able to impose a decision on the minority. There is thus an incentive to find solutions conforming to the interest of a majority of members. It also implies that decisions of a supranational body governing a policy area by majority vote amount to an intrusion into national sovereignty of individual states, as the latter's freedom to define policies on their own behalf is compromised. Hence, decision-making power of such an organization may be considered to be quite substantial. Yet, there is the possibility to restrict the majority rule by introducing a qualified majority requiring e.g. a specific percentage of majority votes, or a special weighting system of different member states as employed in the Council of the European Union.[138]

[137] See section 1.1.

[138] See article 238 (3) TFEU.

However, decision-making power of that kind is only effective if respective policies are (legally) enforceable within member states. If not, the possibility exists that states may attempt to delay or even refuse implementation of policies. In constitutional societies, this problem can be mitigated by the availability of recognized judicial institutions the judgments of which are legally binding to member states. In the EU, the Court of Justice of the European Union is the relevant actor able to enforce European law.[139] If the opinion prevails that a member state has failed to fulfill its obligations under the treaties, both the European Commission and any member state may bring the matter before the Court of Justice whose judgments have to be complied with by the state concerned. This form of supranational jurisdiction with direct applicability in member states represents a very high level of integration in the vertical dimension. A second option is to make use of a Court of Arbitration. In an arbitration process, the parties in dispute agree to a binding resolution by a third party intermediary who has been selected by the parties themselves (Mcilwrath/Savage 2010: 5). The shortfall of arbitration is that respective resolutions are compulsory, yet not necessarily compatible with (superior) laws and also not directly enforceable. In the case of FABEC, being embedded in the Single European Sky legal framework, compliance with the overarching legal context is important to achieve overall SES objectives. Arbitration is therefore considered to be an inferior mean of enforcement. A third option is to revert to a mediation process. Mediation is a "diplomatic procedure, which endeavors to settle a controversy by assisting the parties to reach a voluntary agreement" (Ross 1968: 507). As the definition suggests, the outcome of mediation is entirely subject to the disputing parties, and decisions are non-binding. Consequently, mediation is a very weak instrument to enforce policy decisions and international agreements.

Sectoral dimension

The *sectoral* dimension of integration encompasses the decision-making scope of a supranational organization, in other words, the number and quality of policy areas or sub-areas which are governed at the supranational level. The qualitative aspect refers to the sensitivity of a specific issue area subjected to supranational decision-making. As was shown in the previous chapter, enhanced cooperation and integration in the following functional areas of

[139] See article 251ff. TFEU.

air traffic management would allow for an overall improvement of ATM system performance:

- ATM regulation and oversight
- Airspace and route network design (including definition of military airspace)
- Harmonization of operational procedures
- Provision of air traffic control service (civil and/or military)
- Safety management
- ANSP performance management
- Airspace and capacity management
- Civil - military cooperation
- Aeronautical information management
- Harmonization/selection and procurement of ATM technology
- Definition of air navigation service charges
- Centralization of various ancillary and support functions (e.g. CNS, ANS training, administration)

Decisions in some of these policy areas will have a more profound impact on a nation state (and its domestic actors) than others. If decision-making authority in a sensitive policy area is transferred to a supranational body, the level of integration may be considered higher than if a less important issue area is concerned. At this point, the question arises as to which of the mentioned policy domains in ATM may be considered sensitive. Different aspects have to be taken into account here. In accordance with the realist perspective, it is assumed that the sensitivity of policy areas increases as more aspects related to the sovereignty and security of nation states are affected. Integration in air traffic management involves the necessity to allow for cross-border functionalities and a high degree of harmonization relating to a sphere of considerable national relevance: the airspace. A basic prerequisite of the existence and identity of a nation state is to ensure and secure territorial independence (Kim-

minich/Hobe 2000: 74f.). National governments will therefore seek to safeguard sovereignty over their territory. This territory, however, does not only encompass the respective surface area, but also includes the airspace above that area within the lateral limits of the national boundaries (Haller/Kölz 1999: 9f.). Moreover, from a military perspective, air sovereignty is an essential precondition to be able to secure a specified land area, which makes national airspace a valuable asset (Stahel 1993). Hence, governments will normally endeavor to keep sovereign control over their airspaces. The ability to protect national airspace requires appropriate air policing and air defense capabilities. Effective air force operations, in turn, raise the need to establish training areas which have to be located in relatively close proximity to the respective military airfields to allow quicker access and to avoid excessive fuel burn during transit. This implies that availability, dimensions and location of military airspace are of high significance. It is thus fair to consider the definition and design of airspace structures and ATS route networks, the regulation of airspace activities, as well as the provision of air traffic control service to be nationally sensitive tasks. This is especially the case when operational (military) air traffic is concerned. It also highlights the importance of keeping the regulatory bodies (supervisory authorities), air navigation service providers, and air traffic control infrastructure – in particular civil and military control centers – under national supervision and control. If decision-making on such issues is transferred to a supranational organization, its functional scope is considerably expanded.

Besides this national security point of view, sensitivity can also be looked at from a stakeholders' perspective which is more related to the economic implications of integration. Although variations among societal actors may be expected as to the level of perceived concernment when losing decision autonomy, any transfer of decision-making power to the supranational level may be sensitive to them if subsequent decisions will affect their existence, functional status, or resources in terms of staff or finances. This applies if the supranational organization is given the capacity to modify domestic structures in the supranational interest and permitted to impose organizational or infrastructural changes, for example through centralization of specific ATM related functions. Also, the alteration of monetary flows by deciding on the level and distribution of air navigation service charges, or the setting of performance targets for air navigation service providers are significant intrusions into domestic actors' prerogatives. Certain decisions may even become nationally relevant, such as the centralization of personnel-intensive tasks or the selection and procurement of

ATM technology, as national economies might be affected. Economic sensitivity may be presumed to be less salient compared to the sensitivity of matters directly affecting national security and sovereignty. However, when acting on the liberal-intergovernmentalist assumption that government preferences are mainly shaped by domestic societal actors, both national security and economic related sensitivity have to be taken into consideration. Finally, the consolidation of technical areas such as safety management, ATFCM, and AIM, or the pure harmonization of rules, operational procedures and technology without any structural changes will only have limited impact on the sovereignty over national airspace or on the status of domestic stakeholders. To sum up, the following areas related to air traffic management are presumed as sensitive, implying a higher level of integration if respective decision-authority is transferred to a supranational organization:

Sensitivity		**Policy areas in ATM**
National sovereignty and security perspective	Very high	Definition of airspace and route network design (including military airspace)
		Definition of location & area of responsibility of military area control centers
	High	Definition of airspace and route network design (excluding military airspace)
		Definition of (civil) supervisory authorities' institutional setup
		Definition of ANSP institutional setup/model
		Definition of location & area of responsibility of civil area control centers
		Definition of principles for civil-military cooperation
Economic Perspective		Definition of charging policy / air navigation service charges
		Definition of ANSP performance objectives

Table 6: Sensitive policy areas in the domain of air traffic management

Horizontal dimension

Finally, the *horizontal* dimension of integration refers to the number of states subject to supranational regulation and decision-making. This dimension is not taken into consideration in the present study, as the object of interest – the Functional Airspace Block Europe Central – is composed of a defined number of states (and one international organization). This composition is not expected to change in the near future, since the neighboring states

around FABEC already are part of other functional airspace block initiatives.[140] It is conceivable that in the long run shifts in state participation may occur, or that the integration process will continue beyond FAB boundaries. This possibility is not reflected yet in the framework of the present analysis.

Institutional vs. functional integration

Apart from the institutional definition of integration, relating to the decision-making power transferred to the supranational level, it is the *functional* perspective which is ultimately relevant when it comes to assessing the effectiveness of an integration project. This prospect refers to the already mentioned functional areas of air traffic management that may or will *in fact* be subjected to integration. Normally, integration in functional terms follows formal institutional integration concluded by a multilateral agreement or treaty. However, the possibility exists that an international agreement reflects functional integrative steps already taken, as was partially the case during the development of Eurocontrol.[141] The difficulty with the current case study is that FABEC is presently based on a formal agreement and has until now seen only marginal steps of functional implementation.[142] In the context of this study, therefore, the attained level of integration can only be assessed from an institutional perspective.

Prioritization of dimensions

Analysis will consequently be limited to the three aforementioned institutional dimensions: *decision-making power*, *enforceability of policy decisions*, and *decision-making scope of the supranational organization*. To be able to bring combinations of different parameter values into a ranking order, the respective dimensions have to be prioritized. A key competence of a supranational organization is its ability to take decisions based on a majority rule. Without this, the organization does not possess any relevant autonomy at all and will not be able to act in the interest of the community, since nation states will always use their veto power to foster individual interests. Considered second in order is the capacity to enforce

[140] See figure 1.

[141] See Ladenbauer (2005): 37.

[142] See section 3.4.

policy decisions, the only ability granting supranational policymaking a chance of being effective. If the necessary enforcement mechanisms are available, the functional scope in terms of quality and quantity of policy areas under supranational rule is the third relevant dimension. Any other ranking than the one proposed is not advisable, as the mentioned dimensional characteristics only take effect based on their superior dimension. It may seem peculiar that the functional scope is considered to be of less importance than decision and enforcement rules. The purpose of integration is seen here in the opportunity to enhance the capacity to solve transnational problems and to act for the good of the community and its participating states in a coordinated way. This is only possible if supranational rulemaking remains effective and is not undermined by individual nations. Ineffective regulation at supranational level cannot be expected to bring about the benefits of integration, even when covering a large functional scope. Therefore, the latter is considered secondary only. Based on the previous explanations, the level of integration is operationalized as follows:

Dimension	**Operational definition**		**Lvl of measurement**
Vertical	Weighted combination of the	supranational organization's voting procedure	Ordinal scale
		degree of enforceability of decisions/rules	Ordinal scale
Sectoral		extent and sensitivity of the supranational organization's decision-making scope, whereas sensitivity is assessed in accordance with table 6	Ordinal scale

Table 7: Operational definition of 'level of integration' (in order of priority)

Data acquisition

Since the level of integration correlates with the extent to which a supranational organization is granted decision-making authority by its member states in certain functional issue areas, there is a need to focus on international state agreements by which this kind of transfer is officially effected. As already mentioned, the FABEC Treaty, signed on 2 December 2010, constitutes the first formal step towards establishing the Functional Airspace Block Europe Central. It will thus serve as the basis for this analysis. The legal text of the treaty will hence be subjected to a qualitative content analysis. The respective coding agenda used is based on the categories defined for the three dimensions of 'level of integration' during operationalization. Units of analysis are the legal provisions contained in the treaty. Provisions corresponding to a specific category are subsequently assigned to it.

Dimensions	**Categories**
Voting procedure in executive/ legislative body of a supranational organization	• Unanimity • Qualified majority • Majority • No binding vote / consultative only
Enforcement of policy decisions	• Appeal to European Commission / European Court of Justice • Appeal to a Court of Arbitration • Use of a mediation procedure • No enforcement mechanism
Functional scope of decision-making	*Very high sensitivity from a national security perspective:* • Definition of airspace and route network design (including military airspace) • Definition of location & area of responsibility of military area control centers
Functional scope of decision-making	*High sensitivity from a national security perspective:* • Definition of airspace and route network design (excluding military airspace) • Definition of supervisory authorities' institutional setup • Definition of ANSP institutional setup/model • Definition of location & area of responsibility of civil area control centers • Definition of principles for civil-military cooperation
	Sensitivity from an economic perspective: • Definition of charging policy / en-route unit rates • Definition of ANSP performance objectives
	Low sensitivity: • Definition of safety management policies • Definition of airspace and capacity management (including air traffic flow management) principles • Definition of ATM operational standards and procedures • Definition of ATM technological standards for the FABEC area • Definition of aeronautical information management standards • Definition of ANS training standards

Table 8: Coding agenda for 'level of FABEC integration' related to institutional integration

As the source for analysis is an objective legal text, both test-retest and parallel-forms reliability may be assumed. Also, the defined categories leave little room for interpretation, so no significant divergences should emerge if different researchers code the source content. Hence, inter-rater reliability should also be assured.

4.2.3 Influencing power of domestic societal actors

The independent variable of the first hypothesis 'influencing power of domestic societal actors' in the context of political integration is next to be operationalized. This concept was specified in sub-section 1.3.1 by the following dimensions: *organizational capabilities*, *degree of individual concernment of group members*, *specificity and homogeneity of group interests*, and the *ability to interfere with vital societal functions*. Where necessary, each dimension was further divided into sub-dimensions, determining the respective elements in a specific order of priority. Operationalization will be conducted along the various sub-dimensions, as they ultimately constitute the overall theoretical concept.

Organizational capabilities

The first dimension, the *organizational capabilities* of a societal group, was further specified by three sub-dimensions. The first to be addressed is the *level of organization*. This sub-dimension originates from the notion that any kind of influencing action, be it political lobbying or in particular the interference in essential functions of society, necessitates efficient and strict leadership in order to be carried out successfully. This implies a hierarchical organizational structure composed of a steering committee (e.g. an executive board), coordinating respective activities, sub-divisions in case of larger organizations, and established communication channels in order to be able to pass instructions and directives to subordinate group members. Inferior to this (ideal) situation would be a less hierarchic structure where executive functions are carried out, but no discretionary power can be exercised over members of the group. Here, leadership is based on democratic principles and persuasive power, which may be less effective at first sight, but still can develop a powerful dynamic if group members can be convinced of taking action. However, a loose organizational structure with only informal, or even no institutionalized leadership, and only limited access to group members, will either dissipate or strongly exacerbate the effectiveness of activities. This will most probably be the case also if a group displaying a non-hierarchical organization attempts to create an ad hoc structure to execute a specific lobbying or influencing activity. Since there are no established structures during daily operation, which also would ensure the required routine and interpersonal relations between hierarchical levels, an ad

hoc structure will be difficult to run effectively. Hence, the *level of structural hierarchy of an organization* will be assessed and used as the respective indicator.

The second sub-dimension of a group's organizational capability is the *density of political networks*. This is related to the concept of policy networks, which are defined as "clusters of actors, each of which has an interest, or 'stake' in a given (…) policy sector and the capacity to help determine policy success or failure" (Peterson and Bomberg 1999: 8). The policy network concept is normally used as an analytical tool to determine policy outcomes.[143] Instead, for the present study the notion is extracted that political decisions are ultimately shaped by contributions from different stakeholders, which are engaged in policy networks and include specific interest groups. Such involvement may be more or less formalized, ranging from direct involvement in drafting groups or co-decisional structures, official participation in consultation processes, to informal meetings between individual representatives. Although formal inclusion in decision-making processes may be viewed as the most powerful way to influence political decisions, interpersonal connections and relationships to relevant stakeholders and decision-makers can also be very useful for promoting an interest group's arguments and to shape policy. In the latter case, it is important to maintain a regular relationship to be able to build a foundation of trust, which promises a better chance of getting a positive response to lobbying activities. A minimum of two contacts per year should be viewed as the bottom line in order to still consider an interpersonal relationship regular, as it may lose cohesion after a longer period of time. The greater the number of significant stakeholders the group has regular relations with, the more effective this method of influence is. In turn, the significance of stakeholders depends on their political influence in a specific issue area. As steps of political integration require decisions at government and parliament level, relations with respective representatives stand at the fore. Since specialized committees usually prepare the policies to be decided in parliament, members of such committees should be in focus. At government level, the officials responsible for drafting policy proposals form the second group of addressees for lobbying activities. In addition, leaders of national political parties are the third group of functionaries that play an important role when it comes to shaping the opinion of political parties involved in parliamentary decision-making. An interest group's influencing potential is assumed to be

[143] See, for instance, Peterson (2003).

stronger if it has more contacts to the aforementioned individuals available. The two partial indicators for the density of political networks shall therefore be: 1) the *level of involvement in decision-making processes* and 2) the *number of relevant political stakeholders regular contact is maintained with*, in this order of priority. With regard to the latter indicator, the reference to a number does not necessarily require a quantitative measurement. Particularly in those cases, where an organization is in intense contact with a variety of relevant political actors, it may be difficult to provide exact numbers. A qualitative assessment of network density at an ordinal scale is thus also acceptable. This would imply the appraisal of whether several or only single political levels (as specified above) and whether several or only few (<5) political individuals are addressed per level or within the entire lobbying-network. Generally, one may make the criticism that the focus of these indicators is too specific with regard to the type of stakeholders addressed. On the other hand decisions about complex subjects, such as aviation and air traffic management, require highly specialized knowledge. Decision-makers therefore need to rely on experts and on political stakeholders dealing with these issues at a greater level of detail. It therefore makes sense to restrict lobbying activities and thus operational definition to these actors.

The third sub-dimension to be looked at is the *financial strength* of an organization. This concept partly focuses on the ability of an organization to promote its views and positions about a specific topic in the public sphere through intensive (and thus costly) public relations activities, thereby creating indirect public pressure on the political institutions aimed at influencing policy in the intended direction. Again, when dealing with the policy domain of air traffic management, thorough expert knowledge is required to be able to understand all the relevant issues associated with it. Consequently, public framing is firstly difficult and secondly may not have the desired effect, as the subject may be too technical and hence may not generate the public interest needed to be pursued to the political level. Societal actors may thus be expected to revert to direct lobbying activities with political decision-makers, which of course should be more effective if the financial means allow for making use of professional lobbyists. The availability of sufficient financial resources is also necessary when considering taking legal action to promote or obstruct a specific policy decision. Yet, no domestic legal framework normally exists to enforce political integration beyond national boundaries. Conversely, it is conceivable that a societal group contesting integrative steps could refer to national laws that restrict the achievable level of integration,

in particular when associated with institutional change. However, intention to do so implies that a corresponding policy decision was taken illegally, which is very unlikely, as governments and parliaments will presumably adapt the respective legal basis as well. Should a revision of the legal framework be required at constitutional level, which usually entails submission to a public vote, an opportunity might exist for an opposing party to evoke national sensitivities against an integration project. Nevertheless, as the ATM domain is a very complex issue area, stakeholders will most probably rather concentrate on direct lobbying activities to shape policy decisions and hence endeavor to build an extensive network with political decision-makers. The density of such networks is addressed by the previous sub-dimension and also reflects, to a certain degree, the financial power of an organization or interest group. In the context of air traffic management there is thus no necessity to specifically take into account the financial resources available to a societal group.

Degree of concernment of the group / group members

The next dimension of 'influencing power', *degree of concernment of the group / group members*, was specified by *direct operational, financial, status-related and/or cultural concernment*. Several aspects have to be considered here: 1) Are the expected (positive or negative) effects of integration certain to materialize? 2) Is there a risk that, without integration, positive results will not materialize? 3) How many members of the group are directly affected by respective implications? 4) How significant are those effects? These questions have to be addressed in the operationalization process. It is important to note that – except for the third question – objective replies are not viable. Since only *expected* gains and/or losses from policy coordination (or lack thereof) are referred to, their certainty, significance, and risk are always subject to the assessment of individual group members. As far as the personal appraisal of *significance* is concerned, it is of little use to quantify financial gains or losses, as the evaluation whether a certain amount is significant or not may differ from group to group and even from individual to individual. *Status-related* concernment refers to potential changes in hierarchical or organizational position and/or geographical location of a group member. An individual may perceive corresponding changes as incisive, be it positive or negative. Lastly, *cultural* concernment refers to any type of personal concernment other than financial or status-related. Such concernment may be associated with ideology, religious beliefs, or other personal convictions that are affected by active (or

missing) policy coordination. Evidently, correlation may exist between the different dimensions. This is negligible though, as in the context of this study, overall concernment comprising all possible dimensions is of relevance. Based on these deliberations, the *extent of perceived certainty, significance (of expected operational, financial, status-related, and/or cultural gains or losses), and risk* will thus be applied as indicator. Finally, the *percentage of group members subject to individual financial/status-related/cultural benefits and/or losses* is to be assessed. Since a precise quantitative indication might be difficult for an organization to provide, an ordinal ranking of estimated size of respective sub-groups is also acceptable. The sum of empirical variables explicated above permits operationalizing individual concernment. It is obvious though that it would not be practical to measure these variables at the level of each individual group member, but to draw upon executive bodies or other steering committees who normally manage the organization, aggregate group opinions, and act in their members' interest.

Specificity and homogeneity of group interests

Thirdly, *specificity and homogeneity of group interests* was defined as the *availability of specific policy objectives and solutions*. It is the underlying argument that tangible and unambiguous policy goals are easier to represent externally and give an indication that opinions of group members are sufficiently homogenous to be able to identify common goals. This definition is already usable as an indicator. As the present study refers to political integration in the area of air traffic management, in particular with regard to FABEC, there is a need to examine whether a specific interest group has concrete propositions as to the level of integration to be achieved. The more specified and comprehensive its opinion on how the future in respect of FABEC and/or air traffic management in Europe should look, the more effective influencing activities at the political level are expected to be. This implies that 'preference intensity' of domestic stakeholders needs to be assessed in accordance with the respective operational definition provided in the next sub-section.

Ability to interfere with vital societal functions

Finally, the *ability to interfere with vital societal functions* is looked at from an operationalization point of view. One of the respective sub-dimensions comprises the legal basis required to be able to engage in corresponding activities. Some organizations may not be

permitted by law or any other applicable legal basis to cease service provision, or are only allowed to do so under certain conditions. Hence, the operational definition to be chosen here is the *extent to which applicable legal provisions allow or prohibit organizations from interfering with vital societal functions*.

The ability to successfully interfere with vital societal functions also depends on the degree to which the main task of an organization can be substituted by a different organization in a timely manner. If public service provision is resumed by a substitute within a short period of time, the intended pressure from interference will be lost. The time aspect is difficult to accommodate, since the immediacy of effects from interference differ between types of public service. However, even if a substitute organization is available with a certain delay, the disruptive impact is reduced. Hence, measurement of this sub-dimension will be restricted to the *number of alternative groups available to ensure identical service provision*. If there are more substitutes obtainable, the chances increase that one substitute organization will possess the required capacity to fulfill additional tasks on behalf of the organization which has discontinued service provision.

Finally, the magnitude of implications from interference in essential societal functions should be taken into consideration. This can be assessed in two dimensions: *number of people affected during one day of service interruption* and *time to perceived impact (immediacy)*. The more people who are concerned by service interruption (and the faster the corresponding impact is felt, leaving little time for individual preparation and compensatory measures), the greater the public pressure will become to resume service provision and the higher the chance for demands of a disruptive group to be accommodated. As there is no value added in performing exact counts of individuals being affected, numbers are to be expressed in terms of average estimations. Because it is not possible to calculate specific time delays until impact, it will suffice to assess whether an impact is immediate or not, and therefore delay is expressed in nominal terms. The following table summarizes the previously explicated operational definitions of ‘influencing power of domestic societal actors’, including all its sub-dimensions:

Sub-dimensions (in order of priority)	**Operational definition**	**Level of measurement**
Level of organization	Level of structural hierarchy	Ordinal scale
Density of political networks	Level of involvement in decision-making processes	Ordinal scale
	Number of relevant political stakeholders regular contacts are maintained with	Ratio/Ordinal scale
Operational, financial, status-related, and/or cultural concernment of the group /group members	Perceived certainty of (positive or negative) effects to materialize	Ordinal scale
	Perceived risk of positive effects not to materialize	Ordinal scale
	Percentage of group members subject to individual financial/status-related/cultural benefits and/or losses	Ratio/Ordinal scale
	Perceived significance of expected impact	Ordinal scale
Availability of specific policy objectives and solutions	Level of integration to be achieved (according to operational definition of preference intensity in sub-section 4.2.4)	Ordinal scale
Legal basis for interference with societal functions	Applicable legal provisions allowing/prohibiting societal interference	Ordinal scale
Substitutability of group tasks	Number of alternative groups available to ensure identical service provision	Ratio scale
Magnitude of implications	Number of people affected during one day of service interruption	Ordinal scale
	Immediacy (delay of perceived impact)	Nominal scale

Table 9: Operational definition of 'influencing power of domestic societal actors'

Data acquisition

Before entering the discussion about suitable methods to evaluate 'influencing power', it has to be determined who the relevant societal actors are that strive to influence the policy decisions in the area of air traffic management in general, and in respect of FABEC in particular. It is evident that the ATM sector is a highly specialized domain requiring extensive expert knowledge to fully comprehend the various issues associated with it. Moreover, the general public usually has very little knowledge and understanding about air traffic management and air traffic control, as this particular field is normally not directly visible to outsiders, even when traveling by air. It is only exceptional delay situations, incidents, or accidents which grant air traffic control increased public attention. Hence, there are only very few stakeholders who have a direct link to, or are directly or indirectly affected by air traf-

fic management activities and who therefore have an interest in shaping the evolution of this domain. Even then, the required expert knowledge needs to be available in order to contribute in an effective manner to these developments.

As the ATM sector is characterized by the sovereign nature of its tasks and functions, and thus is closely tied to national governments, one could be tempted to question the applicability of a liberalist approach in terms of Moravcsik, where "private individuals and voluntary associations decisively constrain the identities and purposes of politicians and governments" (1993: 483). However, despite continuous governmental regulation, control and even ownership, the execution of air traffic management functions has gradually moved from a structure of government agencies to a system of corporatized or semi-privatized air navigation service providers with extensive financial and managerial autonomy. This was accompanied by a change in status of air navigation service personnel from government officials to company employees, syndicating to unions and associations to have their interests represented. Hence, *air navigation service providers* and *staff representative bodies*, such as professional associations and unions, may be regarded as societal actors with individual preferences, which they will attempt to make heard in the political system when it comes to policy decisions in their area of activity. As these organizations are at the front-line of ATM operations, they are both highly affected by respective policies and possess the necessary know-how to provide the relevant inputs. Since this study is focused on the transnational aspects of air traffic management, it makes sense to limit the analysis to those air navigation service providers in the FABEC area operating en-route area control centers. This excludes Luxembourg where the ANSP provides aerodrome and approach control services only.[144] The situation with regard to staff representation is somewhat more confusing. In certain countries, there is just one organization representing the entire ANS staff community, while in other nations several groups are responsible to convey the interests of staff working in the air traffic management domain. On one hand, this has to do with the separation of professional associations and trade unions, as is the case in France. Specified trade unions maintain social relations to employers and negotiate labor contracts, while professional associations represent the *professional* interests of the respective occupational category. On the other hand, there are numerous active professions in air traffic control, namely air traffic

[144] See table 4.

controllers (ATCOs), air navigation services employees (ANSEs), air traffic safety electronics personnel (ATSEP), instructors, administration staff, and more, which are organized in some kind of staff representation body. Definition is required as to which staff associations and unions should be taken into account for the purpose of this study. As the goal is to assess the influencing potential of interest groups, one would prefer to concentrate on those groups that generally feature a strong incentive to influence policy decisions in the ATM domain. Looking at the various categories of staff there are some with a high degree of specialization, which cannot, or only in a limited way, make use of their professional skills outside the field of air traffic control. This is mainly true for ATCOs, ANSEs, and ATSEP. Since there is only one major air navigation service provider per state, alternative job opportunities within the same country are limited. One may therefore expect that there is an enhanced incentive for these professional groups to shape their working environment as extensively as possible in their own interest. Secondly, when comparing the three categories, the greatest influencing potential can be attributed to the air traffic controller group. They are the ones to ensure the very core processes of air traffic control, are specially selected and recruited, cannot be replaced easily, and are generally short staffed all over Europe.[145] Hence, with regard to the inter-state comparison being undertaken, it is advisable and permissible to focus on associations and unions representing air traffic controllers. For that reason, only those organizations will be taken into consideration the membership of which consists of at least 50% of active ATCOs, representing at least 50% of all ATCOs in the respective country, as there may be certain transport unions representing several occupational categories with only a minority being professionals in ATC. The differentiation of professional associations and unions is of no relevance here, as FABEC has a potential impact both on the social and on the professional sphere. Consequently, both types of staff representative bodies will further respective interests in their specific area.

A third type of organization may also be considered a societal actor in the policy domain of ATM, although it even to a lesser extent fits the description of a non-governmental pressure group: *national defense authorities*, or more specifically, *the air force*. Like any civil aircraft operator, the air force is a ‘customer’ of the air traffic management system, depending on optimal air traffic control service provision in accordance with their military

[145] See, for instance, IFATCA (2008).

operational needs. As a customer with very specific interests that sometimes compete with the requirements of civil airspace users, the articulation of such interests becomes important to secure its own position in the struggle for airspace and other scarce ATM resources. The air force is often responsible for providing military air traffic control service to OAT flights and thus has the respective knowledge at its disposal. In addition, military authorities (like national ministries of defense) usually represent the national security and defense perspective at the government level. One may argue that these military institutions are such an inherent part of a government structure that there is no specific need for political interest representation. Nevertheless, comprehension of the specialized requirements with regard to air force operations is usually only available inside the respective organizational structure and still has to be conveyed to governmental decision-makers. Moreover, in the context of this study it is important to understand the dynamics of military and security considerations affecting integration processes related to air traffic management.

The other major group of customers mainly concerned with the safety and efficiency of the air traffic management system are the *civil airspace users*, predominantly those conducting flights operating under instrument flight rules (IFR) and thus being subjected to air traffic control. Yet, the main users of the ATM system in Europe are the scheduled commercial air carriers, operating some 2'800 aircraft on 12'000 daily flights and carrying around 340 million passengers per year[146] on a tightly interconnected hub-and-spoke network.[147] They suffer the most from inefficiencies in the system, as ATM fragmentation is *per se* expensive, produces delays, increases fuel consumption due to extensive holdings and inadequate flight profiles, and as a consequence leads to higher overall costs for the airlines. Moreover, since the deregulation of the air transportation sector, European airlines are operating in a highly competitive environment which leaves little margin for benefits. These carriers thus have a strong interest in a functioning and cost-efficient air traffic management infrastructure and will beyond doubt actively promote any step in that direction, even without necessarily having any expertise in the field of ATM. This applies in particular to those airlines home-based within the FABEC area, as they execute the majority of flights in that region and therefore would considerably profit from defragmentation. This

[146] Numbers relate to the airlines represented by the Association of European Airlines (AEA), the principal transnational interest organization for 36 scheduled network carriers in Europe (www.aea.be).

[147] See also Ladenbauer (2005): 57f.

study will therefore restrict its focus on the so-called 'flag carriers' of respective FABEC nations, i.e. the relevant major airlines performing the highest number of flight operations in these countries. Although several airlines with respectable flight frequencies are located in nations such as Germany, it seems unobjectionable to limit the selection to the flag carriers only, given the fact that their opinions and interests can be viewed as profoundly representative for the branch. Moreover, these organizations may be expected to traditionally feature close ties to the government level in terms of influencing channels. In summary, air navigation service providers, unions and associations representing air traffic controllers, air forces, and scheduled commercial network carriers in the FABEC area represent the relevant stakeholders to be considered in this analysis. The following tables list these actors per category and country (sources: websites). Air forces are not listed specifically, but every FABEC nation, except for Luxembourg, possesses an air force.

Air Navigation Service Providers

Country	Name of ANSP	Civil/Military	No. of ACCs	Website
Belgium	*Belgocontrol*	*civil*	*1*	*www.belgocontrol.be*
France	*DSNA*	*civil*	*5*	*www.dsna.fr*
Germany	*DFS*	*civil/military*	*4*	*www.dfs.de*
The Netherlands	*LVNL* *MUAC*	*civil*	*1* *1*	*www.lvnl.nl*
Switzerland	*Skyguide*	*civil/military*	*2*	*www.skyguide.ch*

Table 10: ANSPs operating ACCs in the FABEC area

ATCO staff representative bodies (fulfilling the requirements stated above)

Country	Name of ATCO staff representative body	Website
Belgium	*Belgian Guild of Air Traffic Controllers (BGATC)*	---
France	*Syndicat National des Contrôleurs du Trafic Aérien (SNCTA)* *French Air Traffic Controllers' Association (FATCOA)*	*www.sncta.fr* *www.fatcoa.com*
Germany	*Gewerkschaft der Flugsicherung (GdF)*	*www.gdf.de*
Luxembourg	*Guilde Luxembourgeoise des Contrôleurs de la Circulation Aérienne (GLCCA)*	*www.atc.lu*
The Netherlands	*Netherlands Guild of Air Traffic Controllers (NGATC)*	*www.atc-gilde.nl*
Switzerland	*Swiss Air Traffic Controllers' Associations (SwissATCA)*	*www.swissatca.org*

Table 11: ATCO unions/associations in the FABEC area

Major airlines[148]

Country	Name of Airline	Number of aircraft[149]	Website
Belgium	*Brussels Airlines*	*53 (2011)*	*www.brusselsairlines.com*
France	*Air France*	*254 (2011)*	*www.airfrance.com*
Germany	*Lufthansa*	*361 (2010)*	*www.lufthansa.com*
Luxembourg	*Luxair*	*17 (2011)*	*www.luxair.lu*
The Netherlands	*KLM*	*118 (2011)*	*www.klm.com*
Switzerland	*Swiss Intl. Airlines*	*68 (2011)*	*www.swiss.com*

Table 12: National main carriers based in the FABEC area

For practical reasons, and to accommodate the fact that not all stakeholders within FABEC have provided the information required to conduct this analysis, inter-state comparisons will not be effected between all FABEC states, but between a selection of states which are deemed to be representative. As stated earlier, Germany, one of the two bigger states in the FABEC area, the Netherlands as a smaller EU member, and Switzerland, as non-EU member, will be chosen for analysis of influencing power. When deriving the operational definition it was shown that 'influencing power' is a complex, multi-dimensional concept that requires a differentiated operational definition. There are five partial indicators which are related to the individual perceptions of societal groups: the *level of integration to be achieved in FABEC* (preference intensity), measured to assess the availability of specific policy solutions and further operationalized according to the instructions in sub-section 4.2.4; as well as the *perceived certainty, risk, and significance of potential positive and/or negative impacts of integration*. Apart from the aspired level of integration, which can be a formally established position and may also be available in the form of an official position paper, perceptions of concernment are best captured by interviews with the respective members of the organization. As it would not be viable to assess all individual opinions of group members, this study instead approaches formalized or informal leadership structures to provide their assessment on behalf of the whole group by means of the abovementioned online questionnaire. Notwithstanding the fact that views may significantly vary across membership and

[148] Major European airlines according to http://www.nationsonline.org/oneworld/Airlines/airlines_europe.htm (October 2011).

[149] Source: www.wikipedia.org (October 2011).

that group opinion thus may not be correctly reflected in its entirety, the management perception usually is the basis for activity of an organization. Moreover, in democratically organized groups such as unions and associations, executive boards will normally represent their members' opinions if available to them. In larger organizations, the questionnaire will usually not be replied to by members of management personally, but by those experts involved in the relevant topic. There is thus a certain risk that expert opinions are acquired instead of official positions, particularly when evolution is ongoing and the attitude of an organization is not fully consolidated yet. On the other hand, as these experts normally play a significant role in providing advice to the management boards on how to proceed, expert and official positions may not be too far from each other in the end. Hence, this possible shortfall is acceptable.

In order to be able to clearly distinguish between different group perceptions but at the same time support the evaluation of responses, the structured interview method is applied, using ordinal response categories. The same is used for the partial indicator measuring the *percentage of group members subject to individual benefits or losses*, which will be based on subjective estimations rather than an objective assessment, as explicitly the perceptions stand at the fore. To obtain an overview about the expected positive and negative effects of FABEC integration, respondents are also given the opportunity to further explain their specific perceptions in a free text field. The remaining partial indicators of the influencing power concept concerning organizational features, substitutability, or the legal framework for societal interference, can be considered as more objective and thus may be accessible by alternative means and through other sources. Nevertheless, since stakeholder interviews have to be carried out anyway, this research method is made use of to survey the other relevant indicators. This economizes efforts and ensures currency of information with regard to the indicators. With the exception of the mainly ratio-scaled indicator (number of alternative groups), response categories are again ranked ordinally as provided during operationalization.

In respect of measurement of the level of integration to be achieved, it should be added that a specific policy objective and/or solution is considered to be available if more than 90% of the questions related to the level of integration in institutional and functional terms are replied to in an unambiguous manner. If less than 25% of the questions are an-

swered, the indicator will be rated ‘not available’, in all other cases ‘partially available’. This is done in accordance with the notion that only comprehensive positions and opinions on a specific matter will most probably make an organization be heard at the political level.

Other sub-dimensions of influencing power requiring further discussion with regard to their measurement are those related to societal interference. Given the fact that, out of the selected societal actors, the possibility to revert to respective measures can only be realistically attributed to the air traffic controller staff unions. The legal capability to perform such activities as well as the substitutability by other organizations thus need only to be assessed in respect of this actor category. Moreover, it can be expected that service interruptions by air traffic controllers working in area control centers or at major airports will have considerable repercussions on the aviation system of the concerned nation state and even beyond; because aircraft will no longer be able to operate in the airspace affected by air traffic service disruption, a significant number of flights will have to be cancelled or diverted, and a large number of passengers will be stranded at airports. Depending on the level of interference, these consequences can take effect within a very short period of time. Consequently, even if more than one ATCO union is present in one country, there is no need for a domestic comparison. The impact dimension of societal interference will therefore not be measured in the framework of this study. In summary, the various indicators for ‘influencing power of domestic societal actors’ are measured applying a standardized online questionnaire and using the response categories as shown in the following table:

Operational definition	Categories	Instrument of measurement
Level of structural hierarchy	• Institutionalized governance body (e.g. formal leader, executive board) • Institutionalized governance body with democratic structure • Informal leadership (ad hoc or permanent) • No leadership structure	Standardized online questionnaire
Level of involvement in decision-making processes	• Co-decision on all relevant matters • Co-decision on selected matters as decided by the organization • Co-decision on selected matters as decided by government • Formal consultation on all relevant matters • Formal consultation on selected matters • Informal consultation initiated by government • Informal consultation initiated by the organization • Informal contacts to individual government officials • No involvement	
Number of relevant political stakeholders regular contacts are maintained with	• Several stakeholders on several political levels • Few stakeholders on several political levels • Several stakeholders on single political level • Few stakeholders on single political level • No contacts	
Perceived certainty of (positive or negative) effects to materialize	• Certain • Likely • Unlikely • No effect • Not assessable/no opinion	
Perceived risk of positive effects *not* to materialize	• Very high • High • Low • No risk • Not assessable/no opinion	
Percentage of group members subject to individual financial/status-related/cultural benefits and/or losses	• Majority benefit • Majority loss • Equal share of benefits and losses • Not assessable/no opinion	

Operational definition	**Categories**	**Instrument of measurement**
Perceived significance of expected impact	• Very significant • Significant • Low significance • Insignificant • Not assessable/no opinion	Standardized online questionnaire
Availability of specific policy objectives and solutions as to the level of integration to be achieved	• Available • Partially available • Not available	
Applicable legal provisions prohibiting societal interference	• Interference permitted • Interference permitted under conditions • Interference prohibited	
Number of alternative groups available to ensure identical service provision	*Number*	

Table 13: Coding agenda for 'influencing power'

As to the reliability of using an online questionnaire, one may assume inter-rater reliability, as it is irrelevant by which researcher the questionnaire is administered to the respondent. If the positions and perceptions of respondents' organizations do not dramatically change over time, which is not likely in the field under investigation, test-retest reliability is ensured. With regard to parallel-forms reliability, questions may arise as to the suitability of using an online questionnaire as opposed to conducting a personal interview. It is obvious that practical considerations have led to the decision to use the former method. The difficulty with an online questionnaire is the fact that there may be misunderstandings or misinterpretations of research questions, since there is no possibility for direct clarifications or explanations. Furthermore, the impersonal nature of an online interview may render respondents more cautious as to the completeness of their replies. The study attempts to compensate for these deficits by initial telephone contacts to the individual respondents, explanatory introductions to the research questions, and, where necessary, by a short debriefing with respondents after having filled in the questionnaire.

4.2.4 Preference intensity in respect of cooperation/integration

'Preference intensity' constitutes the dependent variable of the first hypothesis and is also one of the relevant dimensions of a nation state's bargaining power in international negotiation settings.[150] In the realm of the present study, this concept refers to the degree to which a nation state perceives a requirement to engage in policy coordination and/or to achieve an integrated solution within the domain of air traffic management, specifically in the framework of FABEC. Hence, the *government preferred level of integration in respect of FABEC* may be used to conceptualize the preference intensity of an individual nation state. The higher the level of integration a national government strives to attain, the greater its preference intensity towards an integrated solution. The 'level of integration' concept as operationalized earlier can be used respectively. However, when determining preferences, it makes sense not only to consider the institutional decision-making perspective, but also the national governments' (and domestic actors') viewpoints regarding the *functionally desirable* level of integration.[151] In doing so it will be possible to better assess attitude discrepancies between governmental and domestic societal actors, which in turn may provide a clearer explanation for a specific outcome of an integrative process. The operational definition for 'preference intensity' thus needs to be supplemented by the functional dimension in accordance with the areas of cooperation and possibly integration listed in the 'level of integration' sub-section.

The functional/operational aspect of integration

Air navigation service providers and their air traffic control facilities represent the core activity of air traffic management, being at the front-line of respective processes. Integration or cooperation in most of the functional areas listed in sub-section 4.2.2 will thus either depend on, or at least be facilitated by an integrated institutional model of air navigation service provision as well as by an integrated solution with regard to the main ATM infrastructure, namely the area control centers. Only close cooperation or integration between ANSPs

[150] See following sub-section.

[151] See sub-section 4.2.2.

will remove potential individual obstacles to operational integration, among them concerns about the dimension of their area of responsibility and airway network, which are linked to the distribution of route charges. In the wake of a more transnational ANSP structure, other management and support functions will be integrated as well. It may even pave the way for a consolidation of air traffic control centers in terms of a reduction of the number of centers. This, however, is not a necessary precondition for greater efficiency of the ATM system, as a multiple center structure has its advantages (see below).

As was elaborated in sub-section 3.3.3, the FABEC feasibility study identified three cooperation scenarios for air navigation service providers which involve different degrees of centralization and integration of functions: the contractual cooperation model, the alliance model, and the single ANSP model. These three models are also seen as possible stages through which the current ANSP landscape in the FABEC area could evolve over time. A governmental preference for either the single ANSP or the cooperation model provides a clear indication towards the aspired level of overall integration in air traffic management, since these models involve either full centralization of corresponding functions or no centralization at all. On the other hand, a governmental choice in favor of the alliance model allows for various options as to which functional areas should be centrally managed at FABEC level, especially when considering the degree of nationally or economically relevant sensitivity of integrated areas. National governments may even actually prefer a single ANSP structure, but would like to approach this state not by means of a 'big-bang' scenario, but rather in a gradual manner. It can be expected that governments in favor of a single ANSP structure will communicate this from the beginning, or at least try to prepare the alliance structure for a later transformation into a single provider. It thus makes sense to focus the assessment of governmental preference intensity in *functional* terms on establishing their preference regarding the ANSP institutional model and to determine the functional areas to be centrally managed, should the alliance model be the preferred one.

During the introduction it was indicated that the rather large number of air traffic control centers in Europe play a contributory role in respect of air traffic management fragmentation. The main concerns here are high overall infrastructural costs, the lack of technological interoperability between the different centers, and a considerable amount of interfaces that do not accommodate traffic flows. Comparison with the situation in the United States

of America shows that the U.S. system is able to handle a larger number of aircraft with fewer en-route centers than Europe, although one has to take into consideration that the United States operate 27 so called TRACONs (Terminal Radar Approach Control facilities) in addition to their en-route centers, some of them comparable to the European lower ACCs in respect of their size and dimensions.[152] Nevertheless, there is certainly room for optimization, of which a lot might already be achievable by ensuring interoperable technology, e.g. in the form of a 'virtual center'.[153] Obviously, this concept would only marginally address the issue of infrastructure cost. However, it must also be noticed that a multiple center structure has its advantages. Despite today's manifold redundancies of technical equipment, a system breakdown or any other type of contingency can always occur. The availability of several centers mitigates the impact of a contingency event and allows partial compensation for the loss of one facility. In addition, the social costs for transferring a large number of staff from one location to another must not be underestimated. In any case, the desire to consolidate area control centers is a relevant partial indicator for (functional) preference intensity and will be surveyed in the framework of this study. However, results must be interpreted with caution as respective stakeholders may also make the previous considerations. Up to this point, focus was mainly put on civil air traffic control facilities. It should be noted that FABEC member states also operate military air traffic control centers with different levels of integration between civil and military ATC.[154] Should governments be in favor of including the military part in their center consolidation plans, the preferred level of integration would be significantly enhanced.

In order to not only give attention to the operational side of air traffic management, but also to the regulatory level, this study will also assess the governmental preference with regard to the institutional setup of the national supervisory authorities, the regulatory bodies at national level. As ATM regulation and oversight is one area where more uniformity can contribute to better cooperation and increased integration, the preferred future organization of today's nation-based supervisory and regulatory system shall be assessed. In light of the

[152] FAA (2011).

[153] A 'virtual center' is composed of a number of physically existing control centers that are equipped with the same ATM technology and work with identical procedures based on a coordinated sector structure, thereby conducting ATS operations basically as if only one single center existed. See also MOSAIC (2008): 3-53ff.

[154] See table 4.

integration efforts in the FABEC framework, it could be conceivable to have one single supervisory authority for the entire FABEC airspace instead, which of course would signify a relevant step towards integration as this may also be considered a very sensitive area.[155] To conclude, the following composite indicator is chosen to measure 'preference intensity':

Operational definition	Level of measurement
Preferred level of integration: • *Institutional:* Operational definition of 'level of integration' according to sub-section 4.2.2 applies • *Functional:* Level of preferred *de facto* integration with regard to 1) ANSP institutional model (including preferred functional centralization in the framework of an alliance model); 2) consolidation of area control centers (excluding or including military ATC); and 3) SA institutional setup	Ordinal scale

Table 14: Operational definition of 'preference intensity'

Data acquisition

When intending to measure 'preference intensity' the first step is to ascertain which governmental authority or unit has to be targeted to be able to acquire the relevant indicators. As the idea is to obtain an 'official' government position on the subject of air traffic management development in the framework of FABEC, one will have to approach the respective expert organization within the government structure. Civil aviation matters are normally dealt with by ministries of transport (MoT), where the civil aviation authorities (CAAs), the regulatory and supervisory bodies at national level, are also allocated. It can be assumed that official governmental positions on aviation related matters will be established by CAAs / ministries of transport and ultimately formally adopted by the national legislative and executive bodies. However, when it comes to supranational integration projects such as FABEC, the military dimension is extensively concerned as well. The corresponding ministries of defense may therefore also be expected to form an opinion on the issue. As was explained in the previous chapter, military aviation requirements will usually be articulated by the authority carrying out respective tasks within the defense system, namely the air force. The possibility exists that conflicting or contradictory positions could emerge between civil and military authorities at government level. As FABEC may be considered a

[155] See table 6.

'civil' project (as part of the Single European Sky, which is an integral component of the EU Transport Policy[156]) with intense participation of the military, this study assumes that the MoTs and/or CAAs aggregate the different perceptions and consolidate them to an official state position. When assessing the influence of societal actors, ensuring the inclusion of the ministry of defense / air force perspective will accommodate the military view.[157] Thus the evaluation of data will show whether the above assumption is correct. In conclusion, the national ministries of transport or civil aviation authorities are the actors to be addressed when ascertaining governmental preference intensity with regard to FABEC. The following table lists the respective authorities per FABEC state:

Country	**Name of MoT / CAA**	**Website**
Belgium	Federal Public Service Mobility and Transport	www.mobilit.fgov.be
France	Direction General de l'Aviation Civile	www.dgac.fr
Germany	Federal Ministry of Transport, Building and Urban Development	www.bmvbs.de
Luxembourg	Direction de l'Aviation Civile	www.dac.public.lu
The Netherlands	Ministry of Infrastructure and the Environment	www.rijksoverheid.nl
Switzerland	Federal Office of Civil Aviation	www.bazl.admin.ch

Table 15: Ministries of Transport / Civil Aviation Authorities of FABEC member states

According to the operational definition of this concept the official nation state preference with regard to institutional (decision-making) and functional (*de facto*) integration in the framework of FABEC has to be assessed. One possibility is to look for government position papers that cover the respective indicators; these are made use of where available. However, the interviews with relevant experts of the ministries of transport / civil aviation authorities are the main source of information. Besides being an effective means to acquire up-to-date information, another advantage of this method is the opportunity to gather additional data about potentially perceived (negative) effects from FABEC integration, in order to obtain an additional supportive dimension of the preference intensity concept and to compare the government view with the domestic stakeholders' perceptions. The relevant ordinal categories of the *institutional* dimensions of integration were already defined in sub-

[156] See European Commission (2001a): 36f.

[157] See sub-section 4.2.3.

section 4.2.2 and will be referred to in the interview questions. In addition, the categories of the *functional* dimension have to be specified. This is done in accordance with the dimensions explored during operationalization of 'preference intensity', taking into consideration the sensitivity aspects according to table 6. This results in the following ordinal response categories (categories with increased sensitivity in terms of national security, sovereignty, or economy are printed in bold). Economically sensitive areas in the perspective of air navigation service providers are not highlighted, as they depend on the level of physical integration and compensatory distribution of functions among FABEC ANSPs.

Dimensions	**Categories**
Institutional model for Supervisory Authorities (SAs)	• Status quo (one SA per state) • **One Supervisory Authority for the entire FABEC**
Institutional model for air navigation service providers (ANSPs)	• Contractual cooperation model (no centralized management) • Alliance model (centralized management only in selected functional areas; see below) • **Single ANSP (fully centralized management)**
In case of Alliance model: Centralized management of functions	• Safety management • Performance management • Airspace and capacity management (including Air Traffic Flow Management) • **Civil air traffic control service (GAT)** • **Military air traffic control service (OAT)** • Collection of charges • **Selection and procurement of ATM technical systems** • Aeronautical information management • ANS staff training • Relations with social partners (including negotiation of labor contracts)
Area control center (ACC) scenario	• Status quo • Status quo with harmonized ATM technical systems and procedures • Status quo, but 'virtual center' with fully interoperable technology • Reduced number of control centers (possibly also with 'virtual center' technology); number of ACCs to be specified per country • Single control center for the entire FABEC area (excluding military ATC) • Single control center for the entire FABEC area (including military ATC)

Table 16: Category system related to functional integration in the area of ATM

Because this survey is conducted in an international context, an online questionnaire is again used to collect the required material. After identification of the relevant contacts with the necessary expert knowledge at the ministries of transport / civil aviation authorities of FABEC member states, the respective online link is provided to these individuals. Reliability of this data acquisition method was discussed in the previous sub-section.

4.2.5 Bargaining power in international negotiation settings

The 'bargaining power of a nation state' when placed in an international negotiation setting relating to policy coordination and integration was specified by the following four dimensions (in the order of priority): 1) *a nation state's capacity for unilateral policy definition*; 2) *a low preference intensity*; 3) *its ability to form alternate coalitions*; and 4) *the possibility for compromise, issue linkage, and side payments*. The first dimension, the *capacity for unilateral policy definition*, was explained as the ability of a nation state to define its own uncoordinated policies in a specific issue area without facing negative policy externalities. As every nation state is sovereign and therefore has the basic capacity to pursue its own policies, the main question is whether a state wants to make use of this capacity. This in turn depends on the extent to which negative policy externalities are apprehended in case of an uncoordinated policy situation. Obviously, according to liberal-intergovernmentalist theory, negative policy externalities are predominantly experienced by societal actors, which will subsequently be reflected in their individual group preference intensities conveyed to government. Then again, a national government may conduct its own assessment as to potential negative effects from non-integration, which could partially determine its motivation for policy coordination. Consequently, the indicator to measure the capacity for unilateral policy definition shall be the *assessment by national governments as to potential negative externalities from non-coordination*, whereupon an increased perception of negative externalities signifies a low unilateral capacity to act. When interpreting theory, no *direct* positive correlation should exist between this operational definition and the indicator for 'preference intensity', since the latter is supposed to be determined through aggregation of preferences of influential societal actors and not by governmental assessment of policy externalities. Ideally, but not necessarily, the two opinions will coincide. The separate acquisi-

tion of both indicators thus provides an opportunity to partially assess the validity of the first hypothesis.[158]

The second dimension of a nation's negotiation power, *preference intensity*, was already operationalized in the previous sub-section. The respective operational definition applies.

The third and fourth dimensions, the *ability to form alternate coalitions* to achieve identical policy objectives and the *possibility for compromise, issue linkage, and side payments*, are both to a large extent subject to the evaluation by national governments. As far as the forming of coalitions is concerned, there are certain objective restrictions when it comes to the availability of respective options in the field of air traffic management. Functional airspace blocks make sense only between adjacent countries, since the main goal of these constructs is to create an airspace continuum across national boundaries. The same applies to procedural and technical harmonization, the benefits of which will only materialize across direct interfaces. Therefore, only nations at the periphery of respective FABs would have a choice of alternate cooperation. Naturally the possibility exists for states to seek policy coordination in other sub-domains of ATM that are not automatically connected to geographical vicinity, such as training and ATM technology. However, it can generally be said that in order for policy coordination to be effective, the one-continuum requirement applies to the entire field of ATM, and minimally to the European core area with its high-density air traffic. Nevertheless, it is ultimately up to the governments to consider feasible alternative coalitions. The same is valid as far as room for compromise, side payments, or issue linkage is concerned. Governments (and parliaments) will have to decide on possible exchange options within or across issue areas. The chosen indicators for these two dimensions are the *assessment by national governments as to the possibility to form alternate coalitions and/or to establish compromises, issue linkages, or side payments*, respectively. Criticism may arise because these operational definitions only make reference to governmental evaluations and do not cover the *de facto* opportunities resulting from the actual negotiation process. However, it may be expected that a nation state is aware of its potential 'give-aways' that could be of interest to a negotiation partner. And even in the case of non-response to a respective offer, it is an indication of the relatively stronger position of the

[158] Hypothesis 1a; see section 1.4.

negotiation counterpart, which should already be reflected by the previous dimensions of higher priority.

Dimensions (in order of priority)	**Operational definition**	**Level of measurement**
Capacity for unilateral policy definition	Assessment by national governments as to potential negative externalities from non-coordination	Ordinal scale
Low preference intensity	According to sub-section 4.2.4	Ordinal scale
Ability to form alternate coalitions	Assessment by national governments as to the possibility to form alternate coalitions	Ordinal scale
Possibility for compromise, issue linkage, and side payments	Assessment by national governments as to the possibility to establish compromises, issue linkages, or side payments	Ordinal scale

Table 17: Operational definition of 'bargaining power in international negotiation settings'

Data acquisition

The indicator for 'bargaining power in international negotiation settings' is intended to measure features pertaining to a nation state or national government that promote a strong position when negotiating international accords relating to the establishment of functional airspace blocks, such as the FABEC Treaty. A relatively strong position implies that the nation's own interests can be accommodated in the respective agreement. Apart from preference intensity, which is appraised in accordance with the previous sub-section, measurement of all other dimensions listed above is based on governmental assessments about the negative impact of non-integration and their ability to enter coalitions, to compromise, link issues, or make side payments as back-up strategies for negotiation. As these operational definitions are perception based and cannot be presumed to appear in any official document, the study makes use of the online interview method already employed to ascertain governmental preference intensity, which is a component of the present concept. The questionnaire is thus supplemented by questions relating to the remaining concept dimensions and by ordinal response categories, allowing the respondents to state to what extent they expect negative impacts from non-coordinated policies and whether they have any back-up options at their disposal. However, the questions do not ask governments to specify which concrete alternate possibilities they recognize, as this is not relevant to this investigation and most probably would not be answered due to the potentially sensitive nature of this

kind of information. The reliability discussion about the online interview method held in sub-section 4.2.3 applies.

Dimensions	Categories
Capacity for unilateral policy definition	• Very significant • Significant • Of little significance • Insignificant • Not assessable / no opinion
Preference intensity	According to sub-section 4.2.4
Ability to form alternate coalitions	• Yes • No • No opinion
Possibility for compromise, issue linkage, and side payments	• Yes • Yes, but limited options • No • No opinion

Table 18: Coding agenda for 'bargaining power in international negotiation settings'

4.2.6 Regulatory autonomy of a supranational organization

The 'regulatory autonomy of a supranational organization in the policy domain of air traffic management' constitutes the independent variable of the third hypothesis.[159] In the theoretical chapter this concept was specified by the regulatory scope and the degree of independence from national influences in the agenda setting and decision-making phase during the process of policymaking.[160] Evidently there is a close analogy to the theoretical/operational specification of the 'level of integration' concept. It would therefore seem logical to apply the same operational definition. However, theory puts an increased focus on the aspect of agenda setting, which was not explicitly considered a relevant issue when operationalizing 'level of integration'. Agenda setting becomes particularly important when a supranational organization covers a wide area of different issue areas that are not yet regulated in detail and require further specification. The European Union, assigned rather broad scopes ac-

[159] Hypothesis 2; see section 1.4.

[160] See sub-section 1.3.3.

cording to the respective treaties, often enjoys a fairly large 'freedom' of regulation in related policy areas. In this case, the definition of what should be on the agenda and who defines it suddenly becomes a paramount issue. On the other hand, a supranational organization regulating a relatively narrow functional scope, as would be true for an integrated functional airspace block like FABEC, is limited in terms of the topics subject to agenda setting and subsequent decision-making. It is thus permissible to exclude the agenda setting aspect when analyzing concrete integration projects in the field of air traffic management, but to include it when concentrating on the EU level.

Hence, as the European Union is the focus of the respective hypothesis, it needs to be analyzed whether and to what extent agenda setting and decision-making on this level are influenced by member states. With regard to the first part, the *degree of involvement of states in the agenda setting process* will be subject to investigation. As far as the independence of the decision-making process from national influences is concerned, it seems practical to apply the same operational definition as for 'level of integration', being the *supranational decision-making procedure* in terms of majority, qualified majority, or unanimous voting in the various bodies and different stages of the decision process related to ATM integration. Although supranational decision-making will never be completely without the influence of member states, the options of individual states to superimpose national interests become strongly limited as soon as majority voting comes into play. Finally, the scope of issues that can be added to the supranational agenda and for which decisions are possible fully corresponds to the *functional decision-making scope* as part of the 'level of integration' specification. The respective operational definition including sensitivity assessment applies.[161]

The various dimensions of definitions used to operationalize 'level of integration' were put in a priority order to permit differentiation between combinations of diverging attributes. The same order of priority shall apply here. In addition, however, the issue of agenda setting needs to be included. Because agenda setting constitutes the starting point of decision-making, all other dimensions will be without effect if during the agenda setting phase supranational independence is low. It thus will be rated first priority. In conclusion,

[161] See sub-section 4.2.2.

the following set of definitions is used to operationalize the regulatory autonomy of a supranational organization in this order of priority:

Dimension	Operational definition		Lvl of measurement
Vertical	Weighted combination of the	degree of involvement of member states during supranational agenda setting	Ordinal scale
		supranational organization's voting procedure in the different regulatory bodies	Ordinal scale
Sectoral		extent and sensitivity of the supranational organization's functional decision-making scope, where sensitivity is determined according to table 6	Ordinal scale

Table 19: Operational definition of 'regulatory autonomy of a supranational organization'

Data acquisition

Regulatory autonomy is linked to the competences available to the institutional bodies of a supranational organization provided to them by international agreements. In the case of the EU, the legal foundation is the system of treaties establishing the European Union. As the corresponding hypothesis does not assume an automatic correlation between density of regulation and EU regulatory autonomy in respect of SES I and SES II, measurement of the latter needs to take place in the respective timeframes that have been defined above.[162] Moreover, since the first dimension of the operational definition alludes to the agenda setting process, the relevant period is to be extended forward compared to the timeframe for the dependent variable. As was shown earlier, formal initiation of SES I and SES II regulatory packages was effected by communications from the European Commission on 6 December 1999 for SES I,[163] and on 25 June 2008 for SES II.[164] Obviously, the related items were put on the agenda at least several months before issuance of these communications.[165] Consequently, the consideration of developments of EU treaties has to cover the entire timeframe from mid-1999 until adoption of the SES II legislative package. This rather extended time span has seen a significant evolution of the treaty system of the European Union. This system mainly consists of two treaties, the *Treaty on European Union* (TEU) and

[162] See sub-section 4.1.1.

[163] See European Commission (1999).

[164] See European Commission (2008).

[165] See section 2.2.

the *Treaty establishing the European Community* (TEC), the title of which was changed in 2009 to *Treaty on the Functioning of the European Union* (TFEU). The Treaty on European Union contains the principal provisions as well as the overall objectives of the EU and establishes the respective institutions. It defines the privileges of member states and regulates the common foreign and security policy of the Union, as well as the police and judicial cooperation in criminal matters. The Treaty on the Functioning of the European Union goes into further detail and in particular lists those policy areas where the European Union enjoys regulatory competences, and governs the functioning of the various EU institutions. This is also the treaty that aims at establishing a common market and economic and monetary union, and implementing common policies in order for that goal to be achieved.[166] As far as the civil aviation sector – the focus of the present study – is concerned, the relevant provisions are expected to be largely contained here, as a common market issue is addressed. There may, however, be restrictions with regard to security related aspects which mainly rest under national control of member states. In that respect, the Treaty on European Union may also be applicable and subject to analysis.

Two major amendments revised the mentioned treaty system during the timeframe relevant for this study. They were brought about by the *Treaty of Nice*, effective from 1 February 2003, and by the *Treaty of Lisbon*, effective from 1 January 2009. From May 1999 until February 2003, the EU legal system was based on the *Treaty of Amsterdam*. Hence, the *consolidated versions of the Treaty on European Union (TEU) and the Treaty establishing the European Community (TEC) / Treaty on Functioning of the European Union (TFEU) as amended by the Treaties of Amsterdam, Nice, and Lisbon respectively* are the appropriate sources to determine the agenda setting and decision autonomy of the EU. The following table shows the relevant phases of the policy cycle related to the Single European Sky and, alongside, the respective amending treaties in effect during these phases:

[166] See article 2 TEC (as amended by the Treaty of Amsterdam).

SES package	Policy cycle phase	Amending treaties in effect
I	**Agenda setting** (1999) (1st Communication: 06/12/1999)	Amsterdam
	1st Commission Proposal (30/11/2001)[167]	
	Adoption (10/03/2004)	Nice
	Implementation (2004-2007)	
	Post-implementation Evaluation (2007)	
II	**Agenda setting** (2007-2008)	
	Commission Proposal (25/06/2008)	
	Adoption (21/10/2009)	Lisbon
	Implementation (2009-today)	

Table 20: Amending treaties in effect during SES related policy cycles

The sections of the treaties (TEU and TEC/TFEU) referring to competences and decision-making procedures of European Union institutional bodies, as well as all aviation and air traffic management related content, will be subjected to a qualitative examination using respective treaty articles as units of analysis. After a description of the relevant policy-making processes, the following coding agenda will be applied to assess (in accordance with the operational definition of the theoretical concept) the values of the variables under investigation, taking into account the different bodies of the European Union. As far as the decision scope is concerned, one may expect that EU law will not address the level of detail in terms of ATM relevant functional areas. It is nonetheless of significance whether the European Union possesses the authority to regulate areas which have a direct impact on these fields. The sensitivity assessment is thus of importance as well. Method reliability is assumed to exist in accordance with the respective discussion in sub-section 4.2.2. The only limitation may be seen in terms of inter-rater reliability, as it may be difficult for someone not very familiar with the air traffic management domain to recognize a possible connection between a general EU policymaking competence and the rather specific ATM-related areas. Respective awareness is required when acquiring data based on this indicator.

[167] See European Commission (2001b).

Dimensions	Categories
Degree of member state involvement in agenda setting process	• Full agenda setting competence with member states • Co-decision of member states and supranational institutions • Advisory competence of member states • No formal agenda setting competence of member states
Supranational organization's voting procedure	• Unanimity • Qualified majority • Majority • No binding vote / consultative only
Functional scope of decision-making	*Very high sensitivity from a national security perspective:* • Definition of airspace and route network design (including military airspace) • Definition of location & area of responsibility of military area control centers
	High sensitivity from a national security perspective: • Definition of airspace and route network design (excluding military airspace) • Definition of Supervisory Authorities' institutional setup • Definition of ANSP institutional setup/model • Definition of location & area of responsibility of civil area control centers • Definition of principles for civil-military cooperation
	Sensitivity from an economic perspective: • Definition of charging policy / en-route unit rates • Definition of ANSP performance objectives
	Low sensitivity: • Definition of safety management policies • Definition of airspace and capacity management (including air traffic flow management) principles • Definition of ATM operational standards and procedures • Definition of ATM technological standards for the FABEC area • Definition of AIM standards • Definition of ANS training standards

Table 21: Coding agenda for 'regulatory autonomy of a supranational organization'

4.2.7 Density of supranational regulation promoting ATM integration

The final theoretical concept requiring an operational definition is the dependent variable included in hypothesis 2.[168] As this hypothesis does not suggest a causal relationship between variables on the level of the specific integration project under study (FABEC) but rather on the level of the *overarching* supranational organization (the European Union), the focus lies on the regulatory backbone of the Single European Sky, which subsequently may promote steps of integration at the regional, or more specifically at FABEC level. This implies that the rules to be looked at are those which are either directly aimed at harmonization or integration in the framework of a functional airspace block, or which indirectly attempt to incentivize member states to engage in corresponding integrative activities. If regulation affects areas that are considered to be of increased sensitivity,[169] it implies an additional relevance of the respective regulatory content. Hence, density does not only include a quantitative, but also a qualitative dimension that needs to be taken into account.

As far as the quantitative dimension is concerned, legal obligations in the European Union are normally defined through *Regulations* (directly applicable in all EU member states), *Directives* (binding as to the result to be achieved but open in respect of the method applied) or *Decisions* (binding for those they are addressed to).[170] These enactments are either issued in the framework of the *ordinary legislative procedure*, where a regulatory proposal is initiated by the European Commission and subsequently treated both by the Council and the European Parliament, to be adopted in both legislative bodies; or by means of a non-legislative act, where the Commission regulates the implementation of an issue based on a delegated authority from Council and Parliament (so called *implementing rule*).[171] Hence, the density of regulation in quantitative terms will increase as more legislative and non-legislative acts are (directly or indirectly) aimed at advancing the creation of FABs. Consequently, the present study will assess the *number of EU legal enactments which are*

[168] See section 1.4.

[169] See table 6.

[170] See article 288 TFEU (as amended by the Treaty of Lisbon).

[171] According to article 289ff. TFEU (as amended by the Treaty of Lisbon); see also sub-section 2.2.2.

related to the promotion of harmonization and/or integration in the framework of functional airspace blocks. There is little purpose in counting single provisions or articles as normally they are logically interconnected and thus need to be appreciated as a whole. On the qualitative side, the *degree of impact on sensitive areas* is analyzed in accordance with table 6. This should provide a comprehensive overview of the regulatory activities by the European Union in the area of ATM and FABs and also give an indication of how far supranational regulation is able to overcome potential areas of sensitive national interest, especially when compared to the results derived from the analysis of domestic preference formation and national preference intensities. The following table summarizes the intended operationalization for 'regulatory density':

Dimension	Operational definition	Level of measurement
Quantitative	Number of EU legal enactments related to the promotion of harmonization and/or integration in the framework of functional airspace blocks	Ratio scale
Qualitative	Degree of impact on sensitive areas according to the definition in table 6	Ordinal scale

Table 22: Operational definition of 'density of EU regulation promoting ATM integration'

Data acquisition

The objective is to ascertain legal enactments at the level of the European Union which promote harmonization and particularly integration in the field of air traffic management, specifically the creation of functional airspace blocks. As FAB development was originally initiated by the SES legal framework, the latter continues to be a decisive factor in influencing respective results, especially in those cases where a complex and fragmented interest structure prevails at the level of nation states. Consequently, European Union law is the object of investigation, which implies application of the content analysis method in order to measure the operationalized concept. As the evolution of the EU legal context related to SES is in focus here, the indicator is assessed in two succeeding time periods that display different intensities in terms of SES regulatory activities. As mentioned earlier, they are referred to as *SES I* and *SES II regulatory packages*. The formulation and adoption of both packages extends to a longer timeframe, as legislative procedures are time-consuming and do not produce results over night. The following table lists the relevant regulatory acts contained in these two packages and their respective time periods:

SES	Framework Regulation	Enactments / Implementing Rules
I	*Framework Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky*	
	Service Provision Regulation (EC) No 550/2004	Commission regulation (EC) No 2096/2005 of 20 December 2005 laying down common requirements for the provision of air navigation services
		Commission Regulation (EC) No 1794/2006 of 6 December 2006 laying down a common charging scheme for air navigation services
		Commission Regulation (EC) No 1315/2007 of 8 November 2007 on safety oversight in air traffic management and amending Regulation (EC) No 2096/2005
		Commission Regulation (EC) No 668/2008 of 15 July 2008 amending Annexes II to V of Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services, as regards working methods and operating procedures
		Commission Regulation (EC) No 482/2008 of 30 May 2008 establishing a software safety assurance system to be implemented by air navigation service providers and amending Annex II to Regulation (EC) No 2096/2005
	Airspace Regulation (EC) No 551/2004	Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace
		Commission Regulation (EC) No 730/2006 of 11 May 2006 on airspace classification and access of flights operated under visual flight rules above flight level 195
	Interoperability Regulation (EC) No 552/2004	Commission Regulation (EC) No 1032/2006 of 6 July 2006 laying down requirements for automatic systems for the exchange of flight data for the purpose of notification, coordination and transfer of flights between air traffic control units
		Commission Regulation (EC) No 1033/2006 of 4 July 2006 laying down requirements on procedures for flight plans in the pre-flight phase for the single European sky
		Commission Regulation (EC) No 633/2007 of 7 June 2007 laying down requirements for the application of a flight message transfer protocol used for the purpose of notification, coordination and transfer of flights between air traffic control units
		Commission Regulation (EC) No 1265/2007 of 26 October 2007 laying down requirements on air-ground voice channel spacing for the single European sky
		Commission Regulation (EC) No 29/2009 of 16 January 2009 laying down requirements on data link services for the single European sky
		Commission Regulation (EC) No 30/2009 of 16 January 2009 amending Regulation (EC) No 1032/2006 as far as the requirements for automatic systems for the exchange of flight data supporting data link services are concerned
		Commission Regulation (EC) No 262/2009 of 30 March 2009 laying down requirements for the coordinated allocation and use of Mode S interrogator codes for the single European sky

SES	Framework Regulation	Enactments / Implementing Rules
II	*Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system (Proposal via COM(2008)388 of 25JUN2008)*	
	Service Provision Regulation	Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services
		Commission Regulation (EU) No 1191/2010 of 16 December 2010 amending Regulation (EC) No 1794/2006 laying down a common charging scheme for air navigation services
		Commission Regulation (EU) No 176/2011 of 24 February 2011 on the information to be provided before the establishment and modification of a functional airspace block
		Commission Implementing Regulation (EU) No 1034/2011 of 17 October 2011 on safety oversight in air traffic management and air navigation services and amending Regulation (EU) No 691/2010
	Airspace Regulation	Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management
		Commission Regulation (EU) No 677/2011 of 7 July 2011 laying down detailed rules for the implementation of air traffic management (ATM) network functions and amending Regulation (EU) No 691/2010
	Interoperability Regulation	Commission Regulation (EU) No 73/2010 of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky
		Commission Regulation (EU) No 929/2010 of 18 October 2010 amending Regulation (EC) No 1033/2006 as regards the ICAO provisions referred to in Article 3(1)
	Decisions	Council Decision of 30 March 2009 endorsing the European Air Traffic Management Master Plan of the Single European Sky ATM Research (SESAR) project
		Commission Decision of 29 July 2010 on the designation of the Performance Review Body of the Single European Sky [C(2010)5134]
		Commission Decision of 07 July 2011 on the nomination of the Network Manager for the air traffic management (ATM) network functions of the single European sky [C(2011)4130]

Table 23: Legal enactments related to the Single European Sky (October 2011)

As noted before, the indicator is split into a quantitative and a qualitative dimension. The quantitative dimension refers to the number of EU legislative and non-legislative acts that have been issued in the respective time periods and are related to promoting the establishment of functional airspace blocks. The qualitative dimension intends to measure whether

corresponding acts have an impact on sensitive areas in terms of national security and sovereignty. The effect on the domestic societal actors' perspective of economic sensitivity is also included. To obtain the information in these two dimensions, the relevant enactments related to SES have to be qualitatively examined in terms of their content, using individual articles as basis for analysis. The coding of articles begins with the assessment of whether a specific legal act has the potential of promoting harmonization and/or integration in the framework of functional airspace blocks, by which a first triage is conducted. This step allows the quantitative dimension of the indicator to be determined. In a second step, it will be established whether a legal act is directly or indirectly related to the creation of FABs. In other words, does the law mandate member states to harmonize or integrate in a certain FAB-relevant area, or does it define specific requirements that can only be satisfactorily achieved by means of increased integration, and thus try to incentivize the evolution of functional airspace blocks? In a third step, the nationally and economically relevant sensitivity of the ATM policy areas affected by EU law is ascertained in accordance with table 6. Test-retest, parallel-forms and inter-rater reliability may be assumed.

Dimensions	**Categories**
Potential to promote FAB integration	• Yes • No
Relation to FAB integration	• Direct • Indirect
Nationally relevant sensitivity of affected policy areas	*Very high sensitivity from a national security perspective:* • Definition of airspace and route network design (including military airspace) • Definition of location & area of responsibility of military area control centers
	High sensitivity from a national security perspective: • Definition of airspace and route network design (excluding military airspace) • Definition of Supervisory Authorities' institutional setup • Definition of ANSP institutional setup/model • Definition of location & area of responsibility of civil area control centers • Definition of principles for civil-military cooperation
Economically relevant sensitivity of affected policy areas	• Definition of charging policy / air navigation service charges • Definition of ANSP performance objectives

Table 24: Coding agenda for 'density of EU regulation with regard to FAB integration'

5 EMPIRICAL ANALYSIS

Chapter introduction and summary

This chapter presents the empirical results retrieved from data acquisition, which was carried out in accordance with the methodology detailed in the previous chapter. The level of integration achieved hitherto in the context of FABEC has not advanced beyond an intergovernmental cooperation structure. In particular the unanimous voting rule precludes any supranational character of the Council, FABEC's governance body. In respect of influencing power of domestic societal actors, analysis of the selected FABEC member states shows that unsurprisingly the military component – as a governmental institution – is expected to have the strongest impact on policymaking related to FABEC, followed by the ANSPs, which face strong concernment from integrative processes in air traffic management and are involved to a large extent in the concrete development process. Airlines are less affected on the organizational level, but generally expect a positive operational impact from FABEC integration. Still, the involvement of airlines in respective decision-making processes is limited to consultation only. Finally ATCO staff associations, although potentially highly affected even at the level of the individual, enjoy only marginal influence opportunities at the national level and therefore have unionized in the framework of a transnational interest group. Preference intensity towards FABEC integration is assessed as highest in the Netherlands, followed by Switzerland, France, and then Germany, where for the time being only a cooperative approach is aspired to in certain functional areas. This corresponds reciprocally to the assessment of bargaining power, which is estimated as lowest for the Netherlands, followed by Switzerland and highest for France and Germany. As to the supranationalist concepts, EU regulation that is potentially able to indirectly promote FAB development has significantly intensified from SES I to SES II, whereas issue areas of higher sensitivity to nation states still remain unaffected. On the other hand, general regulatory competences of the EU in the domain of ATM have not increased.

5.1 Liberal-intergovernmentalist concepts

5.1.1 Level of FABEC integration

As described in sub-section 4.2.2, the level of integration refers to the vertical and sectoral decision-making competence deferred by the FABEC Treaty to the FABEC Council, constituting the relevant (future) governance body of this integration project. Recall that the treaty has not yet come into force, as the ratification process is still ongoing. Analysis of the FABEC Treaty along the defined indicator dimensions yields the following results:

Dimensions	**Categories**
Voting procedure in the FABEC Council	• Unanimity (article 23.2)
Enforcement of policy decisions	• Appeal to a Court of Arbitration (application of the Permanent Court of Arbitration optional Rules for arbitrating disputes between two States; article 32.2)
Functional scope of decision-making (derived from all treaty articles, but in particular article 22.2)	*Very high sensitivity from a national security perspective:* • Definition of airspace and route network design (including military airspace; article 8)
	High sensitivity from a national security perspective: • Definition of principles for civil-military cooperation (articles 9.1-9.3, 17)
	Sensitivity from an economic perspective: • Definition of charging policy / en-route unit rates (article 18) • Definition of ANSP performance objectives (article 20)
	Low sensitivity: • Support implementation of a common safety management system (article 10.3) • Ensure establishment of common airspace and capacity management (including air traffic flow management) function (article 9.4) • Ensure harmonization of ATM operational standards and procedures (articles 10.1, 10.2, 10.4) • Ensure harmonization of ATM technical systems (article 13) • Ensure coordination of aeronautical information service provision (article 14)

Table 25: Analysis of the FABEC Treaty with regard to its level of integration

Findings

Analysis of the FABEC Treaty demonstrates that the level of FABEC integration is fairly low at this stage of development. The main reason for this blunt assessment is the applicability of the unanimity rule for FABEC Council decisions. Unanimity implies that each individual contracting state has the possibility to veto and thus block any decision in the Council, should the result of that decision not be satisfactory to the respective government. The unanimous voting principle could be problematic, as it has the potential of endangering progress in FAB evolution and risks outcomes on the level of the lowest common denominator. Consequently, the FABEC Treaty does not actually establish a governance body with supranational character, but leaves all decision-making authority with individual nation states. As mutual agreement is required for any Council resolution, policy enforcement – as addressed by the second dimension – should be a minor issue. States are expected to fulfill the requirements and obligations they have agreed to. In case of a dispute between contracting states as to the interpretation of a defined measure, the option exists to first address the issue to the FABEC Council, and if the issue cannot be resolved on that level, they may refer the question under dispute to an arbitral tribunal, which has the power to inflict a binding award on the states under arbitration.[172] This kind of enforcement mechanism appears reasonable in order to ensure uniform application of treaty provisions. Moving on to the third dimension, the functional scope of the FABEC Council seems to be quite extensive, particularly when it comes to ensuring the harmonization of procedures, services, and infrastructure. This includes the establishment of a common safety management system as well as the implementation of common technical equipment. A common airspace management function and the coordination of AIS and meteorological services are also part of the treaty. All these fields can still be considered to be of low sensitivity. Most of the high sensitivity topics are not even covered by the treaty, despite the requirement for consensus on all issues. This concerns institutional questions such as the definition of governance models for supervisory authorities and air navigation service provision, or of control center locations. It must be presumed that although an institutional consolidation of air navigation service providers and national regulators could have synergetic and thus cost-reducing effects and would facilitate functional integration in general,

[172] According to article 32 (2) of the Permanent Court of Arbitration optional Rules for arbitrating disputes between two States.

national obstacles are still too high to take this route. The only more sensitive areas governed at FABEC level are airspace design as well as matters of civil-military cooperation. The contracting states are to establish written arrangements to promote the implementation of cross-border training areas and to foster the flexible use of airspace between civil and military traffic. Moreover, these arrangements even allow for tactical control of OAT by a unit in a neighboring state. It is evident that these are crucial matters to enable an air traffic management system with increased operational performance. As was shown earlier, benefits for civil aircraft operators such as shorter and more direct routes as well as improved system capacity can only be brought about by reorganizing the airspace and airway structure and by finding optimized provisions for civil/military airspace use. Another important instrument at FABEC level to enhance ATM system performance is the competence of the Council to define common performance targets based on a FABEC performance plan. Notwithstanding the need to be consistent with EU-wide target settings, it provides the FABEC Council with a tool to introduce binding performance requirements across all FABEC member states. The FABEC Treaty also states the intention to establish a single unit rate for en-route traffic within the entire FABEC area. A single unit rate could alleviate today's 'competition between airspaces', where airlines choose the cheapest routings for their flights and – obviously depending on fuel prices – even accept a detour. It may therefore assist in optimizing the airway network. Yet, in spite of quite a significant functional scope placed at FABEC level, the unanimity principle still allows contracting states to put their individual interests to the fore at any time if deemed necessary, and so it remains uncertain whether the FABEC Council will in fact be able to find concerted yet effective solutions in the areas of competence assigned to it.

5.1.2 Influencing power and preferences of domestic stakeholders

As the concept of 'influencing power' takes effect at the domestic level, measurement and analysis of respective indicator data acquired from stakeholders is conducted per nation state. Examination of different dimensions is performed in accordance with the priority rule defined in table 2. The following results were obtained during data acquisition:

Germany

Indicator	Military	ANSP	ATCO Staff	Airline
Level of structural hierarchy	Institutionalized governance body	Institutionalized governance body	Institutionalized governance body with democratic structure	Institutionalized governance body
Level of involvement in decision-making processes	Co-decision on all relevant matters	Formal consultation on all relevant matters; full involvement in FABEC working groups	Formal consultation on selected matters, but no involvement regarding FABEC	Formal consultation on all relevant matters; weak consultation regarding FABEC during initial phase
Number of relevant political stakeholders regular contacts are maintained with	---	Several stakeholders on several political levels	Several stakeholders on several political levels	Several stakeholders on several political levels
Perceived certainty of (positive or negative) effects to materialize	Likely (positive and negative)	Certain (positive and negative)	Certain (positive and negative)	Certain (positive)
Perceived risk of positive effects not to materialize	High	High	High	Very high
Percentage of group members subject to individual financial/status-related/cultural benefits and/or losses	Not assessable	Not assessable	Benefits and losses are equally shared	50% will benefit
Perceived significance of expected impact	Significant	Very significant	Significant	Very significant
Availability of specific policy objectives (level of integration to be achieved; see below*)	Available	Available	Available	Available
FABEC Council voting rule	Unanimity	Qual. Majority	Qual. Majority	Qual. Majority
Decision scope includes mil airspace	No	Yes	Yes	Yes
Decision scope includes civil airspace	No	Yes	Yes	Yes
Decision scope includes center locations / AoR	Yes (civ.+mil.)	No	Yes (civ.+mil.)	Yes (civ.+mil.)
ANSP institutional model	Alliance (incl. civ. ATS)	Alliance (excl. ATS)	Single ANSP	Highly integrated alliance (incl. ATS)
Number of centers	Reduced	Reduced	Status quo	Reduced

Indicator	Military	ANSP	ATCO Staff	Airline
Applicable legal provisions prohibiting societal interference of staff association	---	---	Interference permitted under conditions (no political strikes)	---
Number of alternative groups available to ensure identical service provision	---	---	None	---
Score	**4**	**3**	**1**	**2**
* Only the most relevant categories are shown in this table				

Table 26: Results for 'influencing power' in Germany

Findings

All four selected organizations in Germany possess the necessary organizational capabilities to engage in potentially successful influencing activities. As for the involvement in decision-making processes it appears that the air force, by its institutional status within the national government, has the best means to impact the integration process; the military enjoys co-decision rights on all matters related to FABEC. According to its representative, the Ministry of Defense (MoD) was involved in all stages of FABEC development, which also included drafting the treaty as well as airspace design projects. Although all the other relevant German stakeholders are also formally consulted on matters related to their area of activity prior to governmental decision-making and dispose of several contacts to various political levels, the German ANSP DFS – with its direct involvement in FABEC working groups – is considered to have the second best opportunity to shape decision outcomes with regard to FABEC. Lufthansa, the German airline, has been involved in FABEC consultation workshops at the initiation of the program, but subsequent influencing activity was mainly limited to providing comments on activities in the FABEC context. GdF, the German ATCO association, reports that it is lacking inclusion in FABEC developments at national level and thus attempts to have its views incorporated in the framework of a transnational interest group called *MARC* (MOSAIC ATM Regional Coordination). MARC is composed of trade unions and professional associations representing staff employed by FABEC air navigation service providers. The objective of MARC is to ensure representation of operational staff in FABEC meetings and proceedings related to in-

formation and consultation and to present a single social dialogue partner towards FABEC, but does not intend to replace the local or national social partners.[173]

In terms of the motivational factors to engage in influencing activities, both the interviewed DFS expert and the GdF representative are certain that integration in the framework of FABEC will have both positive and negative effects on their organizations. For the DFS expert, FABEC would provide the opportunity to enhance performance beyond national possibilities, whereas on the negative side there is a risk for ANSPs to lose independency and that supranational compromises will have to be made, which could be less effective. GdF recognizes opportunities for cost savings through synergies in various areas, such as training and common procurement of systems, as well as the facilitation of airspace design. However, increased financial pressure, the loss of decision-making power, and unmanageable structures are seen as possible risks. Lufthansa anticipates only positive effects from FABEC integration, such as improved flight efficiency, enhanced punctuality, reduced fuel burn and emissions, as well as reduced air traffic control charges. The airline respondent has certain doubts whether this will be achieved, though, as the risk of FABEC failure is considered to be very high. The German Ministry of Defense assesses the impact of FABEC integration as likely. Its representative emphasizes the improved possibility to implement cross-border training areas as a positive aspect, as this meets the growing demand for larger training airspace. In contrast, such cross-border operations may generate a certain degree of "noise-import", which may result in counteracting political pressures by the local population in respective areas. In addition, the capacity demand of the civil aviation sector is continuously expected to challenge the unrestricted use of training airspace by the air force. The MoD, DFS, Lufthansa and GdF respondents consider the impact of FABEC integration on their organizations to be significant to very significant, the latter being the assessment of the ANSP and airline representatives. In line with Lufthansa, which is even more skeptical, the three other stakeholders assess the risk for failure as high. Only the question related to individual group member concernment caused some difficulties. Neither the MoD nor DFS were able to offer an estimate in this respect. While the airline estimates that 50% of its employees may profit

[173] See MARC (2009).

from FABEC, the GdF member replied that all staff would benefit and lose in the same way. Overall, perceived concernment seems to be similarly high for all organizations.

To summarize the assessment of influencing power of German stakeholders, it can be stated that its co-decisional power on FABEC matters provides the Ministry of Defense with the highest score. It is followed by DFS, which not only perceives a very significant impact by FABEC on its organization, but also possesses the necessary political contacts and voices within the FABEC working group structure to be able to effectively influence FABEC evolution. Lufthansa is next in order as it lacks institutionalized involvement, although it is a very active lobbyist. Finally, GdF is considered to have the least influencing potential at the national domestic level, since the association has not been at all involved in FABEC matters. Instead, GdF has chosen a transnational course via the MARC group to attempt conveying its interests. Moreover, the staff organization cannot make use of any potential industrial action privileges in this regard; these may not be employed for political reasons.

In respect of institutional and functional integration to be aspired to at FABEC level, the opinions of stakeholders differ. As to supranational decision-making, only the Ministry of Defense favors unanimity votes in the FABEC Council for sovereignty reasons. For the Lufthansa, DFS and GdF experts, a qualified majority would suffice, whereas the ANSP representative specifies that a solution would have to be found to ensure that the smaller FABEC states could not outvote the larger states.[174] Despite his preference for a qualified majority voting rule in the Council, the GdF respondent does not perceive the necessity for a policy enforcement mechanism within FABEC, as the implementation of measures should not be based on coercion. The DFS expert adds that he could not conceive of any effective tool to ensure the agreed application of decisions in case a state is reluctant to cooperate; after all, the potential loss of a state's reputation is the best means to ensure compliance. Only Lufthansa would welcome the possibility of appeal to EU judicial institutions to support policy implementation.

[174] According to the German ANSP representative, the introduction of a qualified majority model was decided for the FABEC ANSP Strategic Board (ASB) in September 2011; according to this, a matter for which no consensus can be reached is submitted to a majority vote; each state enjoys a veto right, although this requires written justification.

Regarding the regulatory scope of the Council, representatives from the MoD, Lufthansa, and GdF all agree that the locations and areas of responsibility of civil and military air traffic control centers should be determined at FABEC level. The MoD respondent specifies that due to today's co-location of civil and military ATC facilities in Germany, the placement of such facilities is irrelevant to the air force as long as the required services are provided. However, it is undesirable to the MoD that military airspace and the civil air route network as well as the NSA or ANSP institutional models should be decided outside the national scope, as the air force may no longer have direct access to respective elements and thus may not have its requirements fulfilled. The same applies for en-route unit rates since, according to the MoD representative, the air force is the second largest customer of DFS in terms of respective payments. Lufthansa is also in favor of maintaining national unit rates to foster (cost) competition between air navigation service providers. DFS, Lufthansa, and GdF could agree that both the definition of the ANSP institutional model and airspace design (including military areas) should be effected at FABEC level. Furthermore, they can imagine a single national supervisory authority for the entire FABEC area. For DFS, though, the alliance model is the clearly preferred ANSP institutional setup, whereas the execution of air traffic services should continue to remain at the national level. There may be the possibility to set up joint ventures between all or some FABEC ANSPs for the common provision of specific services. Such joint areas could include safety management, or selection and procurement of technical systems, but should exclude AIM, training, or the relationship to social partners. The MoD shares the DFS view regarding the alliance model, but could conceive of additional tasks to be centrally managed, with the exception of military ATS. Lufthansa advocates "true operational integration" of ANSP tasks, which should be more than an alliance, but rejects full integration into a single ANSP to avoid a monopolistic structure. Ultimately, for DFS, Lufthansa, and the MoD, the number of centers within FABEC should be reduced; for DFS it is too early to specify according to which criteria this should be carried out. The MoD representative proposes that the civil-military integration of en-route ATS should be aimed for. On the other hand, GdF is striving for a single ANSP, which is consistent with the view of the MARC group that is in favor of a state-owned, fully integrated ANSP for FABEC.[175] This

[175] See MARC/MOSAIC (2008): chapter 1.

single ANSP should operate 'virtual centers'[176] to avoid forced re-locations of ATM staff, whilst ensuring seamless ATM operations through interoperable technology, as well as redundancy in case of center breakdown or other contingencies.[177]

The Netherlands

Indicator	Military	ANSP	ATCO Staff	Airline
Level of structural hierarchy	Institutionalized governance body	Institutionalized governance body	Institutionalized governance body	Institutionalized governance body
Level of involvement in decision-making processes	Co-decision on all relevant matters	Formal consultation on selected matters, strong involvement in FABEC	Informal consultation by organization, no domestic involvement in FABEC	Formal consultation on selected matters, only consultative involvement in FABEC
Number of relevant political stakeholders regular contacts are maintained with	---	Several stakeholders on several political levels	No political contacts	Several stakeholders on several political levels
Perceived certainty of (positive or negative) effects to materialize	Likely (positive and negative)	Certain (positive and negative)	Likely	Certain (positive)
Perceived risk of positive effects not to materialize	High	Low	High	Very high
Percentage of group members subject to individual financial/status-related/cultural benefits and/or losses	Majority benefit	Majority loss	Not assessable	Not assessable
Perceived significance of expected impact	Not assessable	Very significant	Significant	Not significant for airline organization, but very significant for operations
Availability of specific policy objectives (level of integration to be achieved; see below*)	Available	Available	Available	Available
FABEC Council voting rule	Unanimity	Unanimity	Unanimity	Majority
Decision scope includes mil airspace	Yes	Yes	Yes	Yes

[176] See footnote 153.

[177] See MARC/MOSAIC (2008): section 5.1.

Indicator	Military	ANSP	ATCO Staff	Airline
Decision scope includes civil airspace	Yes	Yes	Yes	Yes
Decision scope includes center locations / AoR	No	No	No	Yes (civ.+mil.)
ANSP institutional model	Single ANSP	Alliance (excl. ATS)	Single ANSP	Most cost-efficient solution
Number of centers	Reduced	Reduced (one center in NLD)	Status quo	Reduced
Applicable legal provisions prohibiting societal interference of staff association	---	---	Interference not permitted for political issues	---
Number of alternative groups available to ensure identical service provision	---	---	None	---
Score	**4**	**3**	**1**	**2**
* Only the most relevant categories are shown in this table				

Table 27: Results for 'influencing power' in the Netherlands

Findings

In terms of the dimensions of influencing power, the situation in the Netherlands is comparable to Germany. The Ministry of Defense of the Netherlands is obviously systematically involved in decision-making with regard to FABEC issues and also took full part in determining the contents of the FABEC Treaty. LVNL, the Dutch air navigation service provider, also feels intensely involved in matters related to FABEC as several FABEC working groups are chaired by representatives of LVNL. Yet, consultation of LVNL regarding the treaty took place on an informal basis only. A very different situation is perceived with KLM, the national main carrier. Although KLM is usually formally included in consultations on selected political issues and has several contacts on a political level, the airline feels "consistently excluded" from FABEC. It would generally like to see more institutional involvement of airlines in the FABEC context. Its representative reports that KLM has repeatedly attempted to influence FABEC progress and to push for improvements and tangible results. As for the Netherlands Guild of Air Traffic Controllers (NGATC), political influence opportunities generally appear to be very rare. Consultation

on political matters is effected on an informal basis and only on the initiative of the association itself. Societal interference is not seen as an option, although the basic right does exist. Like its German counterpart, the Dutch ATCO guild is a member of the MARC group and seeks to influence FABEC at the transnational level.

When looking at organizational and individual concernment of stakeholders in the Netherlands, the air navigation service provider LVNL seems to be affected to a high degree according to respective perceptions. This is explained by the fact that LVNL anticipates job losses or transfers of half its staff as LVNL is expected to become part of a larger ATC center upon completion of FABEC integration. LVNL anticipates that certain ATM and support functions such as AIM, CNS, human resources, or legal departments might be progressively centralized in the framework of joint ventures between ANS providers. As a consequence, LVNL considers the impact on its organization to be very significant should FABEC successfully materialize. On the positive side, the Dutch ANSP believes that air traffic management will be more customer focused and performance oriented: FABEC airspace design is expected to be more responsive to customer needs, and air navigation services will become cheaper while safety levels are predicted to remain unchanged and the environment is seen to benefit from shorter air routes. It is interesting to note that LVNL – as almost the only stakeholder – assesses the risk of such positive effects *not* to materialize as low, but then adds the comment that these effects will ultimately take a while to materialize, and when they do, it will be to a lesser extent than expected. KLM, the Dutch main air carrier, also anticipates effects from FABEC integration with certainty and even perceives them to be positive by majority; this as long as a performance driven airspace design remains the objective of FABEC, as today's system is seen to be too fragmented and not cost-efficient. A negative outcome is only expected should ANSPs focus on pursuing their individual interests only, e.g. by striving to maximize their area of responsibility. Obviously, the airline has serious concerns in that respect, as it estimates a very high risk that the mentioned positive effects will not be realized. Although the impact of FABEC integration on the very organization of the airline is minimal, the impact on operational efficiency for a network carrier like KLM is seen as very significant. The interviewed representative of the ATCO staff association did not decide whether the likely effects from FABEC integration will be positive or negative and who within the organization may benefit or lose, but obviously feels generally affected as well; impact on the or-

ganization is considered to be significant, and the risk of FABEC failing to deliver is perceived to be high, but no further comments were made. The Ministry of Defense also believes that there are likely effects from FABEC integration and anticipates both positive and negative implications. On the individual level, the MoD respondent mostly recognizes benefits as to the pay scale for the majority of ATM staff, while a few individuals would probably face losses due to synergetic effects. On the operational and institutional level, the economies of scale and standardization generated by FABEC will, according to his assessment, positively affect military and civil airspace users. On the negative side, decision-making could become more complex than is currently the case. The MoD representative is also concerned that the Single European Sky might be focused too much on the interests of civil airspace users, which may be problematic in view of the prevailing differences between civil and military requirements. For the time being though, he is unable to assess the significance of FABEC integration from a Dutch military perspective, as this highly depends on the end state of FABEC – which is hard to predict at present; a high risk is perceived that individual national interests might negatively affect the final outcome.

Although the military perception of (negative) concernment from FABEC integration appears to be rather low, the MoD must still be considered as the institution that possesses the highest capabilities when it comes to influencing national governmental policy. LVNL is placed as number two, since the negative effects anticipated for its organization may provide them with an additional motivation to make extensive use of their available input channels. Moreover, the ANSP is also strongly involved in the concrete project teams and thus able to shape developments from there. Ranked as number three is the national flag carrier KLM, which sets high expectations in FABEC to improve the air traffic management system but is less concerned organization-wise and not as deeply involved in FABEC proceedings. Finally, the staff associations have to be rated last as their policy network is virtually non-existent and industrial power is not an option to domestically promote their interests in respect of FABEC.

With regard to institutional steps of FABEC integration, the picture presented is rather fragmented. The Dutch Ministry of Defense, LVNL, and the Netherlands Guild of Air Traffic Controllers favor the unanimity voting principle on the FABEC Council.

LVNL could imagine a majority rule at a later stage in FABEC evolution, but is of the opinion that any transfer of functions to the FABEC level can only be effected under the condition of unanimous decision-making at the present stage of development. The Dutch ANSP does not specify at what point in time a move towards a majority rule would be conceivable. In agreement with the two other organizations, LVNL would also transfer the definition power on the NSA and ANSP institutional setup, as well as civil and military airspace design to the FABEC Council, but exclude the right to determine the location of respective air traffic control centers. Moreover, the representative of the Netherlands Guild of Air Traffic Controllers believes that civil-military cooperation principles might be difficult to decide beyond the national level. He is also of the opinion that defining performance objectives is not appropriate in the area of air traffic management, as this generates a competitive situation between ANSPs that could be detrimental to safety. KLM is the only stakeholder to prefer a majority vote in the FABEC Council immediately; it also believes that both airspace design and the location of civil and military control centers should be decided there. In contrast, the definition of institutional models for ANSPs or supervisory authorities, the setting of en-route unit rates, and the establishment of civil-military cooperation principles are perceived as national tasks, while operational, technical or safety standards should be laid down at EU level. Opinions also diverge as to the enforcement mechanisms that should be applied to ensure uniform application of decisions: while the MoD advocates a mediation procedure and both LVNL and KLM prefer arbitration, NGATC could envisage the right to appeal to the EU judiciary system.

On the functional level, KLM advocates the status quo in terms of NSA setup, whereas all other Dutch stakeholders under examination show a preference for a single FABEC authority. The reason for the airline's deviation is its concern that there are national issues, which will continue to require a national supervisory authority, possibly leading to a costly duplication of supervisory structures at national and FABEC level. In respect of the ANSP institutional model, both the MoD and the ATCO association picture a state-governed single ANSP, while KLM prefers any solution that is cost-efficient and capacity creating and provides optimum service to the airlines' business trajectories with a cost-efficient service. LVNL is in favor of an alliance model within which civil ATS might be integrated at a final stage in terms of a common operational concept, but it should still be executed by independently managed control centers. In the ANSP's view,

AIM and training should continue to be carried out by individual providers based on FABEC standards. All organizations except NGATC would like to see the number of en-route control centers reduced. For the MoD representative, a functional approach is required to determine the optimum size of a center before taking into account political considerations; the LVNL respondent could imagine three remaining upper control centers for FABEC, while keeping one lower center per state with civil and military ATS integrated or co-located. Only the ATCO staff organization prefers the status quo using harmonized technical systems and procedures.

Switzerland

Indicator	**Military**	**ANSP**	**ATCO Staff**	**Airline**
Level of structural hierarchy	Institutionalized governance body	Institutionalized governance body	Institutionalized governance body with democratic structure	Institutionalized governance body
Level of involvement in decision-making processes	Co-decision on all relevant matters	Formal consultation on all relevant matters	Formal consultation on selected matters, also in respect of the FABEC Treaty	Formal consultation on all relevant matters
Number of relevant political stakeholders regular contacts are maintained with	---	Several stakeholders on several political levels	Few stakeholders on single political level	Several stakeholders on several political levels
Perceived certainty of (positive or negative) effects to materialize	Likely (positive)	Certain (positive)	Certain (positive and negative)	Certain (positive and negative)
Perceived risk of positive effects not to materialize	Very high	High	Very high	Very high
Percentage of group members subject to individual financial/status-related/cultural benefits and/or losses	Benefits and losses are equally shared over time	Not assessable	Benefits and losses are equally shared	Not assessable
Perceived significance of expected impact	Very significant	Significant	Significant	Low significance (for airline organization)
Availability of specific policy objectives (level of integration to be achieved; see below*)	Available	Available	Partially available	Available
FABEC Council voting rule	Unanimity	Qual. majority	(Qual. majority)	Qual. majority

Indicator	**Military**	**ANSP**	**ATCO Staff**	**Airline**
Decision scope includes mil airspace	No	Yes	---	Yes
Decision scope includes civil airspace	Yes	Yes	---	Yes
Decision scope includes center locations / AoR	Yes (civ.)	Yes (civ.)	---	Yes (civ.+mil.)
ANSP institutional model	Alliance (incl. civ. ATS)	Alliance (excl. ATS)	Single ANSP (step by step)	Single ANSP (private law under state control)
Number of centers	Reduced (1-2 in CHE)	Status quo (initially)	Status quo ('virtual center')	Reduced
Applicable legal provisions prohibiting societal interference of staff association	---	---	Interference permitted under conditions (only contract related)	---
Number of alternative groups available to ensure identical service provision	---	---	None	---
Score	**4**	**3**	**1**	**2**
* Only the most relevant categories are shown in this table				

Table 28: Results for 'influencing power' in Switzerland

Findings

Unsurprisingly, the Swiss Air Force – representing the Department of Defense in FABEC matters – is fully involved in the national decision-making processes with regard to institutional questions and also put down its signature on the FABEC Treaty. Skyguide, the Swiss air navigation service provider, reports that it is deeply involved in the evolutionary process of FABEC as well. Not only was Skyguide formally consulted during the drafting of the treaty, it also provided strong support during that process, contributing in particular to the liability aspects. Furthermore, Skyguide holds the chair of the FABEC ANS Strategic Board (ASB) and has available the necessary expertise to exert direct influence on the development of FABEC. Since the arrival of the new CEO, Skyguide has also considerably increased its number of contacts to political stakeholders at all relevant levels. The national main air carrier of Switzerland, Swiss International Airlines, also possesses a tight political network and, in respect of FABEC, has been involved on a consultative basis and

providing comments. However, the airline is neither institutionally included in any FABEC working groups, nor does it take part in FABEC decision-making bodies, although it requested to do so. Finally, the influencing channels of SwissATCA, the organization representing the civil air traffic controllers in Switzerland, are fairly limited in comparison to the other stakeholders, as involvement in political decision-making is limited to consultation on selected matters and because only very few contacts to the political level exist. However, SwissATCA was consulted on the FABEC Treaty and submitted respective comments in written form.[178] Some members of SwissATCA are directly involved as experts in FABEC operational working groups, but they do not officially represent the association. Moreover, any industrial action needs to be related to the collective labor agreement and could only be given consideration in the case where contractual elements are affected by FABEC. Instead, SwissATCA is also a member of MARC and attempts to make use of the influencing potentials offered by this transnational interest group.

As to concernment, all stakeholders with the exception of the air force expect an impact from FABEC integration with a high degree of certainty. For Skyguide, the anticipated outcome is by the majority positive, but a specification of positive and possible negative effects is not provided. Skyguide believes that integration in the framework of FABEC should be based on a 'give and take'-principle: ANSPs give up certain functions in exchange for other areas in which they are recognized to possess a "specific competitive advantage". This implies that the assessment of positive/negative impact depends on the ability of FABEC air navigation service providers to find the correct balance in this exchange process. A future FABEC structure featuring centralized services and functions with different providers will obviously have a significant impact on the Skyguide organization as a whole. Although convinced that FABEC will yield positive results, Skyguide is aware that, due to the complexity of a multinational project of this kind, the final outcome may be different and also materialize later than originally expected. In any case it is evident that the Swiss ANSP is particularly concerned with any potential change brought about by FABEC, as the provider is relatively small compared to the German and French counterparts and because a major part of its area of responsibility (and thus partial reve-

[178] See SwissATCA (2010).

nue) covers foreign airspace.[179] Swiss Intl. Airlines anticipates both positive and negative effects from FABEC: on one hand, the airline hopes for operational improvements in terms of increased flight efficiency and reduced ATM costs if the FABEC targets are met; on the other hand, there is a risk that the monopolistic character of air traffic management is exacerbated, with all negative implications thereto. Although FABEC impact is seen as significant in respect of a potential reduction of ATM related costs, only little significance is attributed to FABEC as to the impact on the airline organization or operation. The possibility that FABEC development will take a very long time, or ultimately never achieve the necessary level of integration, is rated as very high. Focusing on the ATCO associations under the roof of SwissATCA, positive and negative effects are expected to emanate by integrating ATM in the context of FABEC. On the positive side, increase of overall performance, the development of common standards in ATM, enhanced flexibility with regard to the choice of working location, and the opportunities for cultural exchange are mentioned. On the negative side, an increased pressure on ATCO working conditions, as well as potential forced relocations of staff, are seen as the biggest threats. In terms of individual concernment, those individual members working as ACC en-route controllers are expected to benefit, as opposed to those working in tower/approach control environments; with today's charging system, en-route traffic generates the main income for ANSPs.[180] The comment has been made that the current uncertainties regarding the further evolution of FABEC are difficult to cope with. Consequentially, impact of FABEC is considered to be significant. SwissATCA perceives a very high risk that real operational improvements and cost-reducing synergetic effects will not materialize due to lack of FABEC integration, and that cost pressure is instead shifted onto the air traffic controllers. It thus would seem that the Swiss civil ATCOs feel concerned by FABEC on a very personal level. Finally, the air force anticipates only likely effects from FABEC integration, which are mainly seen in a positive light. Specifically emphasized is the opportunity for a common approach and legal framework for ATM, as well as enhanced interoperability, cost-efficiency, and performance, while respecting the defense interests of states. On the negative side, the emergence of a potentially heavy governance structure is apprehended. At

[179] See section 3.2.

[180] This notion is derived from the fact that traffic volumes and thus revenues in the en-route domain are substantially higher than in terminal areas or at airports.

the individual level, the setup phase of FABEC is expected to see an increase in administrative costs, such as travel expenses. At a later stage, when new FABEC structures are implemented, a (rather small) chance is anticipated that workload at the national level may be reduced by synergies. In any case the air force assesses the impact of FABEC to be very significant, and the risk that positive effects will not materialize as very high, due to the large number of stakeholders and interests involved in the process.

When comparing the different actors relevant to the field of ATM in Switzerland, it becomes evident that they share a similarly high level of concernment, albeit for different reasons. The only stakeholder which could be considered less affected is Swiss Intl. Airlines, as FABEC integration does not directly impact the organization as such. Influencing power is therefore assessed mainly by comparing institutional influence opportunities available to the organizations, as discussed above. Due to its governmental status and thus direct impact on institutional outcomes, it seems obvious that the highest influencing potential should be attributed to the air force. Second-rated is the Swiss air navigation service provider, Skyguide, which possesses the necessary input channels and – even more importantly – expertise to make its voice heard, and shows very strong concernment as to the prospective organizational impact of FABEC. Although Swiss Intl. Airlines enjoys similar opportunities to access the political level, direct influence on FABEC matters is limited to consultation only. Moreover, air traffic management is only one of several other factors affecting an airline, which may produce less overall efforts to advance its preferences. It is therefore ranked number three. The staff association must once more be attributed the least influencing power at the domestic level, based on its marginal policy network and due to the fact that industrial pressure cannot be brought to bear to shape political decisions, even though (individual) concernment may be high.

Moving on to the specific preferences of stakeholders with regard to functional and institutional integration in the FABEC context: The Swiss Air Force prefers unanimous decisions in the FABEC Council due to sovereignty, independence and defense considerations and thus does not recognize a necessity to implement an enforcement mechanism within FABEC, whereas Skyguide and Swiss Intl. Airlines would like to see qualified majority voting in the Council. SwissATCA has no official position on this matter, but states in its commenting letter on the FABEC Treaty that “it remains to be seen whether the ob-

jective of an increased level of integration will be achieved, since the detailed harmonization plans still have to be agreed on by each individual Contracting State", which may be interpreted as an indirect criticism of the unanimous voting rule.[181] According to Swiss Intl. Airlines, EU institutions should ensure the correct and uniform application of respective decisions, while Skyguide would leave this in the hands of FABEC partners by applying a mediation procedure.

At the functional level, the Swiss Air Force would allow the FABEC Council to regulate all aspects except those related to military and security issues. This would exclude the definition of military airspace, military center locations, and civil-military cooperation principles. For Skyguide, only the definition of the ANSP institutional model should be exempted. The allocation of control centers at FABEC level is seen in a context of "controlled competition", by which centers are assigned to the best-performing ANSPs. In the opinion of Swiss Intl. Airlines, decision-power on the supervisory setup should remain a national prerogative. SwissATCA has no formal opinion on which regulatory functions should be transferred to the FABEC level, yet displays a clear preference for a state-owned single FABEC ANSP with managerial autonomy. However, the control center configuration should remain status quo, whereas all facilities should be integrated into a 'virtual center'. As a result, SwissATCA would expect operational benefits, whilst avoiding extensive social costs from staff relocations. Swiss Intl. Airlines, which is also in favor of only one ANSP for the FABEC area, opts for a state-controlled company under private law (corporatized model) to avoid a civil servant status of employees. Furthermore, the number of centers should be reduced in accordance with the best economic and operational solution. The other two stakeholders, Skyguide and the Swiss Air Force, prefer an ANSP alliance. The Skyguide respondent emphasizes that his ANSP supports a model that "assumes the creation of a FABEC Entity in charge of providing central functions for the FABEC." A respective structure could be based on joint ventures between service providers. According to Skyguide all relevant ATM and support functions, with the exception of civil and military ATS and the relationship to social partners, could be centralized in the framework of such a FABEC Entity. In agreement with the ATCO staff, Skyguide supports an initial 'virtual center' setup but could envisage reducing the number of centers in

[181] See SwissATCA (2010).

the longer run. From the Swiss Air Force perspective, only military ATS and AIM would be exempted from centralization in the framework of the ANSP alliance. A cut-down of the number of centers based on operational and functional considerations is preferred, but one or two centers should remain in Switzerland. Finally, in terms of the supervisory setup, the Skyguide representative prefers a single authority, while the military would like to maintain national NSAs cooperating with each other under a common governance structure. Swiss Intl. Airlines is in favor of the status quo, demanding mutual respect as to individual NSA decisions.

Addendum: Received positions of domestic stakeholders in France, Belgium, and Luxembourg

Although not all domestic stakeholders in France, Belgium, and Luxembourg have provided their replies via the online questionnaire, which precludes the empirical analysis of relative influencing power in these countries, the positions of those stakeholders who provided answers shall be presented briefly. Unfortunately, the data received from the air navigation service providers of Belgium and Luxembourg was not utilizable for technical reasons.

France

Replies were provided by the air navigation service provider, DSNA, and by one of the professional associations representing air traffic controllers, FATCOA. The DSNA respondent perceives both positive and negative effects from integration in the framework of FABEC. On one hand, he recognizes the potential to improve the performance of air traffic management for the benefit of airspace users. On the other hand, there is a need to share with FABEC partners what is national for the time being. As to FABEC decision-making, he could envisage a qualified majority voting principle in the FABEC Council, applied in a way that consensus is strived for at first and, if not achievable, a two-third majority would be required for a decision, but the option of justified veto would be retained. Under this rule basically all regulatory functions, with the exception of defining military control center locations, could be carried out at FABEC level. Functionally, a progressively implemented single FABEC supervisory authority is envisaged. Air navigation service provision should also be gradually integrated in the context of an alliance, ex-

cluding civil and military air traffic services and the relationship to social partners. There might still be a future option to move towards a single ANSP; however, this involves sensitive social issues and would require a co-decisional structure on all matters. As to the control center configuration, the DSNA representative would personally prefer the status quo, using 'virtual center' technology.

The representative of FATCOA also sees positive and negative impacts from increased integration of ATM. On the positive side, it could lead to a harmonization on working conditions throughout FABEC. On the negative side, there is a threat that the current status of French ATCOs as civil servants, which involves certain privileges, could be changed to an employment status on a private contract basis. The respondent would also agree to a qualified majority rule in the FABEC Council, and to a strong enforcement mechanism via European Union institutions. In respect of those areas which could be regulated at FABEC level, the FATCOA respondent would exclude the definition of airspace design or control center locations as these are very operational and sometimes sensitive issues. Furthermore, although he could agree to the setting of performance objectives by the Council, the level of adherence to these objectives should be decided nationally. Also the function of air traffic flow and capacity management is seen as better situated at the level of Eurocontrol and nation states. The FATCOA representative prefers an alliance model, whereas performance management, civil and military ATS, AIM, and training should be executed at the national level. A 'virtual center' concept with interoperable technology is preferred over other more integrated options. Finally, supervision should continue to be carried out by a national authority.

Belgium

Utilizable replies were received from the Belgian Air Component (COMOPSAIR) of the Belgian Armed Forces, and from Brussels Airlines, the largest airline based in Belgium. The COMOPSAIR representative recognizes mainly positive effects from integration through FABEC, as all decisions will have to be based on a positive cost-benefit analysis. One of the FABEC key performance areas is 'Military Mission Effectiveness',[182] ensuring that state interests such as military access to airspace are guaranteed. In addition, the al-

[182] See FABEC objectives in sub-section 3.3.1.

ready very efficient multinational upper area control center of Maastricht will, in his view, provide examples of best practice. Regarding the FABEC Council, decisions should be taken unanimously to assure the sovereignty of states. Solutions and improvements are to be found in a manner that none of the partners faces any disadvantages, which is considered possible albeit politically difficult. The respondent also believes that no decision should be forced upon a state by some kind of enforcement mechanism. As to the Council's regulatory competence, all relevant areas except for defining military air traffic control center locations could be transferred to the FABEC level. Yet, airspace design requires military approval, and certain standardizations should be developed at a higher level than FABEC to ensure the interoperability between different functional airspace blocks. As far as supervision is concerned, the COMOPSAIR representative prefers a cooperative approach between NSAs in terms of sharing specialists and procedures at FABEC level. In respect of air navigation services, a single provider would be favored, however, this is not expected to happen soon and will require overcoming different cultures and ways of working. A 'virtual center' is perceived as a cost-reducing option that does not necessitate difficult social negotiations. As this is not so much an issue for the military though, a move to another location is conceivable if it were financially more attractive.

The representative of Brussels Airlines generally expects positive effects from FABEC integration, such as more direct routes, improved predictability of traffic flows, enhanced safety through better coordination, and a decrease of en-route charges by reviewing the organization of air traffic management as a whole and by reducing control centers. Yet to achieve this, respective technology and training is required, and the social risks implied need to be addressed, similar to the situation when cockpit crews were gradually reduced from five to two crew members. The airline respondent is in favor of a majority voting principle in the FABEC Council, including a strong enforcement mechanism to ensure the correct application of policy decisions. With exception of the ANSP institutional model and the location of civil and military control centers, for which states are expected to require a certain leeway for implementation based on a common goal, all areas could be regulated at FABEC or EU level. While a single supervisory authority is preferred for FABEC, an alliance structure is seen to be best suited for ANSPs to allow for differences in implementation following best practices. Such an alliance should mainly centralize safety, performance and capacity management, as well as the selection and procurement of

technical systems. A reduction of centers is appreciated, but this should be based on the principle of pursuing one goal, while maintaining flexibility in implementation.

Luxembourg

The only evaluable position on FABEC integration was received from the ATCO staff association of Luxembourg, GLCCA. Although the Luxembourg guild expects a certain impact from FABEC integration, its respondent is not yet able to decide whether it will be positive or negative, as the direction of FABEC evolution is still unpredictable. In any case the unanimous vote is preferred for FABEC Council decisions but the full functional scope should be covered, with the exception of defining the location of military control centers. In respect of functional integration, the GLCCA representative favors both a single supervisory authority and a single ANS provider, fully in line with the principles of the MOSAIC project, which is supported by the ATCO association.

The position of Eurocontrol

Eurocontrol, as an international organization which, besides its strong involvement in Single European Sky affairs, is considerably affected by the developments in the context of FABEC, also needs to be recognized as a relevant stakeholder in the process. Although Eurocontrol cannot be considered a domestic interest group in the sense of liberal-intergovernmentalist theory, certain influence capabilities are assumed to exist. These are used to address those national governments constituting the members of either the entire European ANS organization, or of Maastricht UAC, which is made up of Belgium, Germany, Luxembourg, and the Netherlands. During data acquisition those stakeholders within Eurocontrol on which FABEC is expected to have most impact were taken into account. They include the Maastricht UAC itself, the Trade Union Eurocontrol Maastricht (TUEM), representing all MUAC staff, as well as the professional association of the Maastricht air traffic controllers, EGATS.

Maastricht UAC

The representative of the Maastricht UAC expects both positive and negative effects from FABEC. In his eyes, FABEC provides an opportunity to expand the MUAC model (a mul-

tinational 'success story' in terms of performance, capacity, and safety) to cover a wider area of responsibility and additional ANSPs for the benefit of the overall performance of the European ATM network. However, the formal creation of FABEC (which may entail uncoupling MUAC from the Eurocontrol organization) could also change today's efficient functioning of MUAC in a more negative direction and might have social implications on staff and current working conditions. As to decision-making in the FABEC Council, consensus decisions are preferred. If this is not achievable, a voting procedure should exist based on a (qualified) majority with veto possibility. All issue areas relevant to air traffic management, in the view of the MUAC respondent could be subjected to the Council's decision-making competence. Moreover, both a single ANSP and a single supervisory authority for FABEC as well as an overall reduction of ATC centers would be preferred.

TUEM (Trade Union Eurocontrol Maastricht)

From the perspective of the Maastricht trade union, the effects from FABEC integration as it is currently underway are expected to be mostly negative. The reason stated for this is the abovementioned possibility that the multinational control center may be removed from the Eurocontrol structure and integrated into a FABEC Entity, which would most certainly lead to a deterioration of working conditions for Maastricht staff. TUEM, as one of the initiators of the MOSAIC/MARC project, is therefore striving to influence respective developments on a transnational level in order to foster a state-owned, single air navigation service provider for FABEC, analogous to today's Eurocontrol/Maastricht model.[183] Consequently, the FABEC Council should be able to take decisions by qualified majority covering all ATM-related areas except military control center locations. It is emphasized though, that almost all of the Council decisions have to be agreed upon together with the unions, as tangible achievements can only be reached with the involvement of staff and their expertise. The TUEM principle, 'one airspace, one service provider', also implies a single supervisory authority for FABEC. At least to start with, the status quo with regard to the control center configuration should be maintained, but technology harmonized.

[183] See www.project-mosaic.eu.

EGATS (Eurocontrol Guild of Air Traffic Services)

The professional ATCO association also anticipates that, in the context of FABEC, MUAC will be detached from the Eurocontrol agency and integrated into a FABEC Entity, which would only see positive results if this entity were to be constructed in accordance with the Eurocontrol model. Otherwise, EGATS expects serious negative effects on employees, also in the case where controllers have to move to a different location due to consolidation of centers. Respective developments are currently unknown. EGATS prefers unanimity in the FABEC Council to protect the right of the smaller FABEC member states whilst being aware that the integration process might be stalled for a prolonged period of time. Except for the definition of the supervisory authority institutional setup, decision authority in all relevant issue areas could be allocated to the FABEC level. Again, one supervisory authority and one single ANSP are seen as the most suitable functional solution for FABEC. It is emphasized that, from a staff perspective, keeping the status quo center setup and upgrading it with harmonized technology would be ideal; however, this is not seen as a realistic option as only a reduction of centers might deliver the required benefits for the ATM system. A single control center would be impractical as it entails high costs for staff transfer and poses the risk of a widespread ATM system failure in the event of a center contingency.

5.1.3 Preference intensities of national governments as to FABEC integration

As elaborated in sub-section 4.2.4, the preference intensity of governmental authorities in respect of FABEC integration is measured at the level of national ministries of transport or civil aviation authorities respectively, and both in institutional and in functional terms, the latter relating to the preferred (*de facto*) integration of ATM functions. Because the examination of the relationship proposed in hypothesis 1b is effected based on the four FABEC nations France, Germany, the Netherlands, and Switzerland, they are in focus here. Due to lack of responses to the online questionnaire, the preferences of Belgium and Luxembourg could not be retrieved; however, this does not pose a problem as to the validity of the overall study, as stated in the operationalization section. The following results were obtained:

Dimensions	France	Germany	The Netherlands	Switzerland
Council vote	Unanimity	Unanimity	Unanimity	Unanimity
Enforcement of FABEC policy decisions	Appeal to a Court of Arbitration	No enforcement mechanism as decisions are based on common commitment	Appeal to a Court of Arbitration	No enforcement mechanism (arbitration as last resort)
Functional scope of FABEC Council (very high sensitivity)	Definition of • airspace and route network design (including mil. airspace) for cross-border areas	---	Definition of • airspace and route network design (including military airspace)	---
Functional scope of FABEC Council (high sensitivity)	Definition of • principles for civil-military cooperation	Definition of • airspace and route network design (excluding military airspace) • location & area of responsibility of civil ACCs • principles for civil-military cooperation	Definition of • SA institutional setup • location & area of responsibility of civil ACCs • ANSP institutional model • principles for civil-military cooperation	Definition of • airspace and route network design (excluding military airspace) • principles for civil-military cooperation
Functional scope of FABEC Council (economic sensitivity)	Definition of • ANSP performance objectives	Definition of • charging policy / en-route unit rates • ANSP performance objectives	Definition of • charging policy / en-route unit rates • ANSP performance objectives	Definition of • charging policy / en-route unit rates • ANSP performance objectives
Functional scope of FABEC Council (low sensitivity)	Definition of • airspace and capacity management ATM operational standards and procedures in cross-border areas • ATM technological standards	Definition of • safety management policies • airspace and capacity management • ATM operational standards and procedures • ATM technological standards • AIM standards • ANS training standards	Definition of • safety management policies • airspace and capacity management • ATM operational standards and procedures • ATM technological standards • AIM standards • ANS training standards	Definition of • safety management policies • airspace and capacity management • ATM operational standards and procedures • ATM technological standards • AIM standards • ANS training standards

Dimensions	France	Germany	The Netherlands	Switzerland
Institutional model for Supervisory Authorities	Status quo (one NSA per country), but cooperation	Status quo (one NSA per country), but single virtual authority by cooperation	One SA for the entire FABEC, but national access must be ensured due to sovereign tasks	NSA for regulation, FABEC authority for oversight
Institutional model for air navigation service providers (ANSPs)	Single ANSP would be supported; gradual approach based on consensus	Alliance model (stepwise development based on added value, but ATS to remain sovereign task)	Single ANSP (step by step)	Initially alliance model, maybe later single ANSP (depending on governance model)
In case of alliance model: Centralized management of functions	---	• Safety management • Performance management • Airspace and capacity management • Selection and procurement of ATM technical systems • Aeronautical information management • Air Navigation Services (ANS) staff training	---	• Safety management • Performance management • Airspace and capacity management • Collection of charges • Selection and procurement of ATM technical systems • Aeronautical information management • Air Navigation Services (ANS) staff training
Area control center (ACC) scenario	Status quo with harmonized technical systems and procedures, possibly virtual center if concept works; functionally beneficial redistribution of airspace conceivable	No opinion as criteria still undefined	Reduced number of control centers (2 upper ACCs, 1 per state, civ./mil. co-located)	Reduced number of control centers (min. 1 per state incl. military)
Score	**2**	**1**	**4**	**3**

Table 29: Results for 'governmental preference intensity' in selected FABEC member states

France

According to the interviewed expert from the French civil aviation authority (DGAC), decisions in the FABEC Council are to be taken by unanimous vote. Qualified majority was reportedly discussed in the initial phase of drafting the FABEC Treaty, but was difficult to align with the fact that there are only few states involved and that some FABEC issues are close to the sovereignty of states. The uniform application of commonly agreed decisions should be assisted by an arbitration procedure, in case other means of dispute resolution prove to be inadequate.

As to the regulatory scope of the FABEC Council, the design of civil and military airspace structures may, in the view of the French expert, be decided at the level of FABEC if related to the cross-border areas between states. The scope of Council competences also includes definition of ANSP performance objectives, cooperation for safety oversight among national supervisory authorities (NSAs), as well as civil-military cooperation and ATFCM principles, and may encompass regulatory harmonization (where not already provided by SES rules). Other ATM-related technical or operational standards, such as for AIM or training, are not seen as regulatory issues for the Council to decide and thus are to be commonly addressed by the FABEC ANSPs or at EU level. The definition of charging policy/en-route unit rates would, in the French view, only make sense if a single unit rate was adopted, which will require more time and might possibly be linked to the creation of a single ANSP.

France is in favor of the status quo in terms of the organizational setup of supervisory authorities, but advocates close cooperation between NSAs. As far as the institutional model for air navigation service providers is concerned, France initially promoted an "integrated organization of air navigation services within FABEC, on the basis of a public service which is not subject to competition and cannot be privatized" (Savary 2010: 14), in short, a single public ANSP. In February and March 2010, this ambition created industrial disputes with those French trade unions that are against a full integration of air navigation service providers.[184] Knowing also that the single ANSP model is challenged by other contracting states of FABEC, France is at present taking a more careful stance in this respect. In principle, the French government would still support a single ANSP, which

[184] See Savary (2010): 15.

remains a long-term option, but wishes to approach the matter progressively through concrete cooperation initiatives between ANSPs according to functional and operational requirements. With regard to the number of air traffic control centers, France prefers to maintain the status quo, but could envisage the redistribution of airspace in cross-border areas where there is an operational requirement based (for example) on traffic flows. In parallel, ANSPs should aim at more harmonized systems through joint specifications or joint procurement, and at a lesser number of major systems. The respective DGAC expert argues that in view of the economic pressures emanating from the performance scheme and of the substantial investments in the modernization of air traffic control systems, particularly in the context of SESAR, the attempt to consolidate centers would for the time being be too costly and energy-consuming from a political, financial and social point of view. A 'virtual center' architecture could become an option if this concept is proven to offer the opportunity to save resources by enabling the temporary transfer of specific ATS functions to another center, for example during periods of low traffic.

Germany

The representative of the German Ministry of Transport emphasizes that he is providing his own personal expert opinion on the matter. However, for the reasons stated earlier, this opinion may still be assumed to correlate to a high degree with the available official position of Germany. As to the decision-making procedure in the FABEC Council, the respondent maintains that there is no other choice than reverting to the unanimous voting principle at this point in time, due to the sovereignty aspects involved in the domain of air traffic management. Consequently, since all FABEC Council members commit themselves to implement the measures commonly agreed upon, there should be no need for a mechanism to enforce policy decisions.

With regard to the regulatory scope, nationally sensitive issues such as NSA and ANSP institutional setup, military airspace structure, or military control center locations, are to be excluded from Council decisions. However, under the condition of unanimous decision-making, civil airspace design as well as the location of civil air traffic control centers could be determined at FABEC level. All other areas of lower sensitivity, such as en-route unit rates, ANSP performance objectives, or technical and operational standards, may also be covered by the scope of FABEC.

In respect of functional steps of integration, the German expert advocates upholding one national supervisory authority per state for practical reasons, but extending cooperation agreements to ultimately operate as a "single virtual supervisory authority" within the FABEC area. In terms of the ANSP institutional model, some sort of alliance structure is preferred in the long run, whereas a stepwise development is desired by moving through cooperative arrangements between ANSPs in keeping with the principle of 'added-value'. According to the German expert, no hard proof has been provided yet that full integration of air navigation service providers and consolidation of control centers constitute the necessary precondition to achieve substantial efficiency improvements in European air traffic management. Hence, Germany's position rather is to "identify and perform functions and services at FABEC rather than individual [ANSP] level", which can be "left at ANSPs' discretion with states in a more passive role."[185] This implies that tailored ANSP cooperation should be sought in those areas where economic and operational benefits as well as efficiency gains are possible, along with a refined cross-border airspace structuralization and the flexible use of civil-military airspace.[186] Thus, in the German view it is not necessary to establish a common legal ANS organization of the six FABEC states at the current stage of development.[187] Possible areas of cooperation and thus centrally manageable functions could include safety, performance, airspace and capacity management, the common selection and procurement of technical systems in ATM, aeronautical information management, and training of ATS staff. However, due to German constitutional constraints the provision of (civil and military) air traffic services is for the time being required to remain a sovereign task. This implies that the German government must be able at all times to execute full authority and influence over the organization providing air traffic services within German territory.[188] Hence, the transfer of air traffic service functions to a centralized FABEC Entity would require intense legal examinations and probably the need to elaborate numerous legal 'precautions' in order to satisfy the constitutional requirements. Furthermore, the German expert does not express an opinion in respect of the

[185] German Comments on: *A model for joint ANS Governance*; presentation to the FABEC States Strategic Board (SSB)/High Level Implementation Board (HLIB) on 27 January 2011, Brussels.

[186] *Ibid.*

[187] *Ibid.*

[188] In accordance with article 87d (1) of the German Constitution (Grundgesetz).

configuration of air traffic control centers in the FABEC area as, in his view, the necessary criteria according to which the optimum size and number of facilities would have to be determined are not available yet. Such criteria would have to comprise center performance, manageability, and number of staff, as well as contingency procedures in case of a center malfunction or failure.

The Netherlands

As regards the decision-making procedure in the FABEC Council, the respondent from the Dutch Ministry of Infrastructure and Environment also supports the principle of unanimity. He acknowledges that a (qualified) majority vote would be much more effective and could probably lead to better decisions, but points out that "Europe is a (quite successful) collection of sovereign States which have learned to cooperate." He adds that air traffic management is closely linked to the instruments applied by states to exercise their sovereignty, and therefore this domain is less suitable for cooperative arrangements by majority decisions. However, this could change in the longer run of the integration process. The Netherlands appears to be comfortable with the arbitration procedure to make sure that policy decisions taken in unanimity are correctly implemented in accordance with the agreement.

The Dutch assessment of the regulatory functions to be transferred to the FABEC Council is based on the precondition of consensual decisions and thus unanimity. The respondent emphasizes that it is vital for a nation state to maintain decision authority over its ANS infrastructure in order to exercise the state obligations and responsibilities under the ICAO Convention in respect of ATS provision, the more so as the Netherlands only possesses one control center completely. In respecting this principle, all ATM-relevant regulatory areas, such as both civil and military airspace design, the definition of the institutional model for supervisory authorities and ANSPs, the definition of the locations of civil air traffic control centers, or the definition of charging principles and unit rates, could be subject to FABEC Council decisions. The only exception is made with regard to the definition of the location and area of responsibility of *military* air traffic control centers.

The ministerial representative would actually prefer a single supervisory authority for FABEC. However, due to the fact that NSAs execute a sovereign task when overseeing ANSPs, the highest state body (i.e. the parliament) should have direct access to the supervisory authority. It might be difficult to find a proper arrangement for a multinational structure fulfilling all requirements related to sovereignty. The respondent can also envisage a single air navigation service provider for the FABEC area as, in his view, only one single ANSP will be capable of removing today's sub-optimal solutions created by local and national interests. However, the expert admits that this will only be possible through a step-by-step approach. A respective (pragmatic) solution could initially entail joint ventures between national ANSPs in operational areas.[189] As to the setup of control centers, the Dutch opinion is in favor of an overall reduction of en-route ATS facilities in the FABEC area. Yet, as the control centers also constitute infrastructure of vital importance to the exercise of state sovereignty, it would be inconceivable to deprive a FABEC member of all its centers. The Dutch representative therefore proposes to keep two upper area control centers, an expanded MUAC for the northern part and a second facility for the southern part of the FABEC airspace, and to operate five ACCs of similar size and traffic volume for the lower airspace. Each (larger) FABEC member state should at least have one center on its soil. Civil and military air traffic control should be co-located at all times in accordance with the model applied by Switzerland.

Switzerland

The replies of the Swiss civil aviation authority (FOCA) representative indicate that Switzerland is in favor of the unanimous voting rule in the FABEC Council due to the sovereignty issues affected by respective decisions. Because of the principle of unanimity, states are expected to commit themselves to the resolutions and measures adopted in the FABEC governance body, and thus it should not be necessary to have instruments to enforce policy decisions. The arbitration procedure is only to be used as a last resort, in case all other means of conflict resolution have been exploited without success.

With regard to the regulatory scope covered by the decision authority of the FABEC Council, the entirety of ATM-related areas may be included in principle, as long as the

[189] See Savary (2010): 27.

unanimous vote prevails. Exceptions to this principle may be possible if they are previously adopted by unanimity. Unanimity is particularly required for all issues of greater national sensitivity. This refers to the design of military airspace structures, the definition of civil and military center locations, and the definition of institutional models for supervision and air navigation service provision.

On the functional level, the Swiss Federal Office of Civil Aviation could imagine a supervisory model where the regulatory part remains with a national-based authority, while oversight functions are carried out by a single FABEC body. As to the ANSP institutional setup, Switzerland is in favor of an alliance structure where operational air traffic management functions are centralized step-by-step in the framework of a FABEC Entity. Such an entity could comprise all functions with the exception of civil and military air traffic service provision. The integration of civil ATS might become an option in the long run, which could result in a single ANS provider at the final stage. However, the readiness of Switzerland to move in such a direction would depend on the legal form that common FABEC provider were to assume: the Swiss government would opt for a state-owned corporation with managerial and financial autonomy, the model applied at the Swiss air navigation service provider Skyguide. As far as the future center configuration is concerned, the Swiss civil aviation authority prefers a reduced number of facilities in the FABEC area, whereas each FABEC state should have at least one en-route control center also integrating military ATS. The respondent points out that the position of the Federal Office of Civil Aviation may change in accordance with the permanent developments and implementation of FABEC in accordance with EU regulations.

Findings

It becomes evident that none of the states under examination is currently willing to endow the FABEC Council with supranational authority by permitting (qualified) majority voting in decision-making. Moreover, as the regulatory competences transferred to the FABEC level are to a large extent subject to the condition of unanimity, a respective comparison only provides a limited indication as to the readiness of FABEC member states to progress to a higher level of integration. Consequently, the overall assessment of preference intensities will have to be based mainly on the desired steps of functional FABEC integration.

When analyzing the results, the Netherlands displays the highest preference intensity towards an integrated ATM structure in the context of FABEC. While pointing to the requirement of maintaining national decision power in respect of its air navigation service infrastructure, the Dutch member state reveals a clear intention to move towards a single ANSP and supervisory structure for FABEC and could envisage a reduced number of centers, including two upper ACCs for the entire area. Obviously one needs to take into consideration that the upper airspace of the Netherlands is already controlled by the multinational control center of Eurocontrol, located in the Dutch city of Maastricht.

The next position in terms of preference intensity should be allocated to Switzerland. Although there is an unambiguous statement that military and security issues are to remain under the prerogative of nation states, at some point the Swiss seem to be willing to subject civil air navigation services to an integrated structure in the FABEC framework, with some degree of center consolidation. This may also have to do with the fact that a significant portion of airspace currently under control of the Swiss air navigation service provider is located over foreign territory of the neighboring FABEC members France and Germany. Integrative moves are also imaginable for Switzerland in respect of the supervisory model.

France is considered to follow Switzerland in terms of their desire to integrate ATM within FABEC. On one hand, France initially pushed towards a single ANSP, which may still be considered a long-term objective but one to be approached with caution, if at all; on the other hand, when it comes to (civil and military) airspace design and operational matters, it basically limits regulatory competences of the FABEC Council to the cross-border areas between states. Moreover the center infrastructure, according to the French government, is to remain status quo, with the option to redistribute responsibilities where deemed functionally necessary. Therefore, it seems that although institutional integration appears to be within the realm of valid options for France, there are still reservations concerning integrative steps with large-scale operational and infrastructural consequences.[190]

[190] This observation also corresponds to the statement of the French government in the beginning of 2010 according to which a single ANS provider for FABEC is proposed, whereas the current areas of responsibility of French control centers and towers shall be strictly maintained; see Savary (2010): 14.

Finally, Germany currently displays the lowest preference intensity with regard to a full-fledged integration of air traffic management in the framework of FABEC, albeit reporting to be fully committed to the project. In the current stage of development a cooperative approach is preferred, which is to be pursued between national air navigation service providers along the line of tangible benefits and where, for the time being, the provision of air traffic services is left out of scope.

Addendum: Positions of Belgium and Luxembourg

Even though Belgium and Luxembourg cannot be taken into consideration in the framework of this study due to missing data, their attitude in respect of the Functional Airspace Block Europe Central shall be presented in brief. In his report on behalf of the French government, Savary (2010: 25f.) offers a sum-up of the positions of these two FABEC member states as to the most relevant issues regarding FABEC integration.

Belgium is willing to look into the possibility of a single ANS provider for FABEC in due course, but initially prefers a gradual approach, taking into account the cultural dimension of air navigation service bodies and being cautious towards large integrated organizations that are likely to change political and social power relations. Belgium would like to maintain control over its lower airspace and is still supportive of the upper area control carried out by MUAC. Belgium is also of the opinion that FABEC offers considerable potential for civil-military cooperation and airspace management.

Luxembourg is sympathetic to the idea of a single ANSP, but does not wish to “disappear off the map” and hence desires to keep its control tower with an operationally relevant portion of airspace. A single supervisory authority is seen as a logical consequence when implementing a single provider, but Luxembourg is aware of the legal problems and sovereignty issues raised by such a prospect.

5.1.4 Theoretical bargaining power of FABEC member states

The bargaining power of FABEC member states in an international negotiation setting is again measured at the level of national ministries of transport or civil aviation authorities respectively. As already indicated, respective replies were received from France, Germany, the Netherlands, and Switzerland. The situations in Belgium and Luxembourg are not taken into account as no data was received from respective governments and because their opinions and positions do not differ extensively from those displayed by the other four states (see above). Moreover, neither Belgium's nor Luxembourg's bargaining power is expected to outweigh the rest of FABEC members considering their size and organizational status in respect of air traffic services. Data acquisition in the relevant indicator dimensions yielded the following results:

Dimensions	**France**	**Germany**	**The Netherlands**	**Switzerland**
Assessment by national governments as to potential negative externalities from non-coordination	Significant; France is committed to FABEC in view of the expected institutional, operational and economic benefits	Significant; reputational risk due to pressure from the European Commission, the airlines and the public opinion	Significant; Amsterdam hub depends on efficient ATM; access through air is vital	Not assessed; positive if FABEC materializes
Preference intensity (from previous subsection)	2	1	4	3
Assessment by national governments as to the possibility to form alternate coalitions	FABEC makes most sense	Theoretically possible, but no option	Theoretically possible, but remote	Theoretically possible, but improbable
Assessment by national governments as to the possibility to establish compromises, issue linkages or side payments	Possible	Possible	Not mentioned	Possible
Score	**4**	**4**	**2**	**3**

Table 30: Results for 'bargaining power' in selected FABEC member states

France

In the perspective of the French Ministry of Transport (MoT), the failure to find effective cooperative and/or integrative arrangements in the context of FABEC would have a significant impact. The functional airspace block concept is fully supported, and France declares itself committed to a successful outcome. The prospect of improved efficiency and economic gains from an integrated air traffic management structure is too important to allow the project to fail. In theory, there would be options available to join together in alternate coalitions to strive for the same objectives. The French respondent points to the fact that earlier attempts have been made to establish a common structure for ANS provision together with Switzerland. However, given the current main traffic patterns and traffic volumes over the European continent, FABEC is simply seen as the most appropriate solution. In his view, the failure of FABEC is "not an option". As to the possibility to compromise on certain issues, the representative of the French MoT indicates that the creation of common functions and services in a balanced way will require compromises by all parties involved, which will most probably also have to include certain issues of greater national interest.

Germany

As far as the German expert of the Ministry of Transport is concerned, a failure of FABEC would create significant negative reputational effects, as the expectations of the airlines, the European Commission, and of the general public towards FABEC are already very high. Hence, in his opinion no FABEC member state can afford an unsuccessful outcome. Alternative FAB constellations would be conceivable in theory; however, their implementation would not be less complex than that of FABEC. In any case, the current FAB concept is to be considered a starting point and may be subject to modifications in the future; traffic patterns may change or a more pan-European approach to air traffic management could be envisaged. As far as the national potential for compromises or issue linkage is concerned, the German respondent concedes that probably every state has, to some extent, respective possibilities at its disposal, but explicitly points out that the use of such options was at this time not considered in the context of FABEC.

The Netherlands

The representative of the Dutch Ministry of Infrastructure and Environment also perceives the potential negative effects from an unsuccessful cooperation and/or integration in the framework of FABEC as significant. This is to be seen against the background of Amsterdam's airport as a major European hub, from which a dense air transportation network is operated requiring extensive hourly air traffic control capacities and a seamless and efficient ATM system. Moreover, access by air is vital for the Dutch economy, and any restriction in this respect could hamper corresponding developments. The respondent could envisage an alternative FAB coalition with the United Kingdom and Ireland, but declares this a very remote option. Finally, the Netherlands appears not to perceive the necessity to exploit any options related to compromise or issue linkage to enhance its negotiation power with regard to FABEC.

Switzerland

The Swiss government representative does not express any opinion with regard to possible negative externalities from non-integration. Instead he recognizes positive effects in the case where cooperation materializes in the FABEC framework. However, given the fact that over 40% of airspace under control of the Swiss ANS provider belongs to France or Germany and that the Swiss government temporarily finances air navigation services provided by Skyguide in the German portion of airspace,[191] one may assume that a certain interest prevails to find a common solution for cross-border air traffic management. This is also underlined by the 2010 Skyguide initiative to evaluate the establishment of a trinational area control center in the border-triangle region around Basel,[192] a project no longer pursued as no agreement could be found concerning the size of airspace to be controlled by the common facility. Although Switzerland is at the boundary of two other FAB initiatives, FAB Central Europe and BLUEMED, accession to these programs is not seen as a viable option for the time being. This may be explained by the strong economic and operational interconnection with France and Germany in terms of air transportation and

[191] See article 101b of the Swiss Aviation Act (LFG).

[192] See FABEC Newsletter 9 – January 2010: 5

ATM network. However, the Swiss representative recognizes the potential for compromises or issue linkages to promote common solutions with neighboring countries.

Findings

Based on the data acquired related to the various dimensions of 'bargaining power', it becomes evident that a clear differentiation of negotiation strengths between individual states is difficult to establish. From a liberal-intergovernmentalist point of view, it would be estimated that the Netherlands possess least negotiating power, as the country perceives a strong national dependency on a functional and efficient air traffic management system and thus displays high preference intensity towards FABEC. Switzerland would have to be placed in a similar position, given its operational and institutional situation of air navigation service provision, which includes an extensive part of foreign airspace. According to the reported perceptions however, it appears that the potential effects from non-integration are not considered too negative. This might be linked to the Swiss experience as a non-EU member, heavily relying on bilateral and tailored solutions for problems at hand. From this viewpoint, (perceived) bargaining power could be slightly higher. As to France and Germany, a well-grounded distinction is hardly possible. It is obvious that both nations may be presumed to be in a strong negotiating position, simply due to their size and economic significance in Europe. Although they are both committed to a positive outcome of FABEC and may face a reputational impact in case of failure, their conceptions about how to organize air traffic management in the context of FABEC currently do not entail a strong integrative approach in terms of operational air traffic service provision. This is also true in the case of France, despite its initial proposal to create a single ANS provider. Hence, theory would suggest that a very high negotiating potential be attributed to both France and Germany.

5.2 Rationalist-supranationalist concepts

5.2.1 Regulatory autonomy of the European Union in the area of ATM

Policymaking in the European Union

The process of policymaking in the European Union has evolved over time. Every amendment to the system of treaties of the Community has also brought some institutional changes, particularly relating to the decision-making phase of the EU policy cycle, which resulted in an expansion of Community decision autonomy. The two major cornerstones of these developments were the introduction of the *qualified majority voting* principle in the Council and of the so-called *co-decision procedure*, known today as the *ordinary legislative procedure*.

Qualified majority voting (QMV), applied in the Council of the European Union and its predecessor institutions, has replaced unanimity in many areas subjected to Community policymaking. As was explained earlier, unanimous voting risks blockage of decisions, as member states tend to hold on to their individual interests without having an incentive to compromise. To counteract this institutional problem of supranational decision-making, the qualified majority voting system was put into practice in the early 1980s and gradually expanded to include more and more policy areas. From the 50 articles of the Treaty on European Union put under qualified majority voting by the Treaty of Amsterdam, the revision of Lisbon has extended this voting principle to a total of 113 articles; only nationally sensitive areas such as taxation, social security, foreign policy, and common defense are still governed by unanimity.[193] Moreover, the conditions for achieving a qualified majority were also adjusted over time to accommodate the changing composition of the European Union by larger and smaller member states. The latest revision brought about by the Treaty of Lisbon will not become effective until November 2014.[194]

[193] See Fondation Robert Schuman (2007): Annex 3.

[194] See article 238 (2) and (3) TFEU.

The second significant step in EU policymaking was the introduction of the co-decision procedure, brought about by the Treaty of Maastricht, effective from 1 November 1993. It entailed empowering the Parliament of the European Union to be fully involved in the legislative activities of the European Union. Again, the scope for this kind of involvement was progressively expanded, particularly by the Treaties of Amsterdam and Nice. The 'co-decision procedure' became the 'ordinary legislative procedure' under the Treaty of Lisbon, which provided for its application to almost all issue areas subject to QMV. The developments described above took place to a large extent during the policy cycle phases related to the Single European Sky packages I and II. The treaties effective during the respective phases are therefore analyzed in accordance with the procedure described in subsection 4.2.6.

SES I

As was shown in table 20, agenda setting and policy proposition related to the first package of the Single European Sky is chronologically situated during the validity phase of the EU legal provisions as determined by the Treaty of Amsterdam. It was noted earlier that the Treaty establishing the European Community (TEC or EC Treaty) stands to the fore in this respect. As the Single European Sky is mainly connected to the issue area of civil air transportation (with some security aspects involved as far as military aviation and air defense are concerned), the EU provisions referring to 'Transport' are in focus. This policy area is predominantly addressed under title V of the EC Treaty, which also corresponds to a respective reference made in article 51 (1) TEC relating to the freedom of providing services in the field of transport. The general intent of the provisions under this title is to establish a common transport policy within the Community.[195] According to article 80 (1) TEC however, title V is applicable to transportation by means of rail, road, and inland waterway, whereas paragraph 2 states that "the Council may, acting by a qualified majority, decide whether, to what extent and by what procedure appropriate provisions may be laid down for sea and air transport", while referring to article 71 TEC as to the procedural provisions to be applied in this respect.[196] Article 71 (1) TEC, in turn, makes a reference to

[195] See article 70 TEC (as amended by the Treaty of Amsterdam).

[196] See also Groeben/Schwarze (2003): 1974.

the regulatory procedure defined in article 251 TEC, in accordance to which the Council shall lay down common rules for international transport or measures to improve transport safety. This is to be done after consulting the Economic and Social Committee (EESC) and the Committee of the Regions (CoR). The procedure described in article 251 TEC is initiated by Commission proposal (acting by majority in accordance with article 219 TEC) submitted to the European Parliament (EP) and the Council. According to article 250 TEC, the Council can amend this proposal by unanimous agreement only. After obtaining the opinion of the European Parliament, the Council may, acting by qualified majority, adopt the proposed act if including the possible amendments made by the EP. Should the Council be in disagreement with the proposal, a common position is to be communicated to the EP. If – after having obtained the position of the Commission – the EP approves the amendments of the Council, the act is also deemed to be adopted. However, the EP can, with the absolute majority of its component members, either reject the common position, which results in the non-adoption of the respective act, or make proposals of amendment and forward them to the Council and to the Commission. Again, the Council can approve such amendments by qualified majority, whereas unanimity is required if the Commission has submitted a negative opinion. If the Council does not approve all the amendments, a Conciliation Committee equally composed of EP and Council members has to be convened to find a common solution which is submitted to a vote in both institutions. If either fails to approve the proposal, the act is deemed to be rejected. Pursuant to article 71 (2) TEC, the procedure described here is replaced by unanimous agreement of the Council if the proposed act could have a serious effect on the standard of living, on employment in certain areas, or on the operation of transport facilities. Yet since the Council, according to article 80 (2) TEC, may decide on the extent and the procedure to be applied in respect of provisions in the domain of air transport, one may assume that this exception is hardly applicable, the more so as ‘serious effects’ on the mentioned areas should not be expected from ATM integration.

A second policy area with Community competence, which could be applicable to the establishment of the Single European Sky, is the development of ‘Trans-European Networks’ (TEN), governed under title XV of the EC Treaty. It also relates to networks in the

area of transport.[197] According to articles 154-156 TEC, guidelines and measures shall be taken by the Council to promote the interconnection, interoperability and accessibility of national networks, acting in accordance with the procedure in article 251 TEC (see above), and after consultation of the EESC and the CoR. However, where the territory of a member state is affected by respective projects, the approval of the concerned member state is required.

Based on above considerations and focusing on the aspect of agenda setting one may conclude that, with regard to the implementation of a Single European Sky, the Commission has available the possibility to make agenda proposals necessary to pursue respective objectives, albeit it is the Council deciding on whether legislative action is required at all in the field of air transport. Furthermore, no direct control by individual member states can be determined in the agenda setting process. Nevertheless, in spite of the independency rule stipulated in article 213 (2) TEC, agenda setting and formulation of proposals may still be expected to be subjected to (informal) lobbying activities to some extent, by various stakeholders. These influence channels are not always transparent and therefore difficult to capture. It must be taken into account that such influences, if there are any, are present at all times irrespective of the timeframe under investigation. Obviously, they may differ depending on preference intensity. Yet it seems permissible to leave such activity outside the scope of this study, as preference intensities of different stakeholders are not anticipated to drastically shift over time and thus should not generate significant variance between the two timeframes under investigation.

Moving on to decision-making, it was shown that the first SES regulation package was adopted in March 2004 under the procedures laid down in the Treaty of Nice. Content analysis of the relevant text discloses that no amendments were made to the respective provisions concerning policymaking in the areas of transport and trans-European networks. The procedure described above thus still applies. While Parliament decisions are taken by absolute majority of the votes cast (if not specified otherwise), the EC Treaty stipulates the following conditions for achieving a qualified majority in Council votes: [198]

[197] See article 154 (1) TEC (as amended by the Treaty of Amsterdam).

[198] See article 205 TEC (as amended by the Treaty of Nice).

- Differentiated weighting of votes across member states (2-10 votes).
- At least 62 votes in favor, for adopting acts proposed by the Commission.
- In all other cases, at least 62 votes in favor by at least 10 member states.

With regard to the functional scope of the European Union, it is apparent that the EU treaties do not cover the specific policy area of air traffic management but provide more general provisions related to supranational decision-making competences in the fields of (air) transport and trans-European networks (TEN). An important limitation is that any TEN guideline or project concerning the territory of a member state requires pursuit of the latter's consent. Moreover, the security and military sphere is excluded from EU competence with the exception of issues relating to the common foreign and security policy, which require unanimous decisions by all member states.[199] This implies that any large-scale (infra-)structural changes in the domain of air traffic management, be it civil or military, have to be agreed upon by every EU member state concerned. Community competence may thus only be assumed in those areas where general principles and standards of a technical and operational nature are to be defined, without having an impact on national ATM infrastructure.

SES II

The SES II legislative proposal emanated from the shortfalls of the first SES package, which proved to be inadequate to foster the changes in the European air traffic management system envisaged by the Commission. Agenda setting for this second proposal may therefore be seen as having started with the post-implementation review of SES I that took place in 2007. The related communication from the Commission was published in June 2008. Agenda setting was thus effected within the EU regulatory framework as defined by the Treaty of Nice. As the respective TEC provisions remained unchanged, the same procedures applied as described above. However, the main legislative proceedings and the adoption of the SES II regulations took place after entry into force of the Treaty of Lisbon. This treaty brought about substantial changes in several areas, including a re-numbering of articles in the two relevant documents: the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU, former TEC). With regard to

[199] See title V TEU (as amended by the Treaty of Nice).

EU decision-making, a new *ordinary legislative procedure* was established, replacing the previous article 251 TEC.[200] Article 100 (2) TFEU, which is the former article 80 (2) TEC governing policymaking in the area of air transport, directly refers to this procedure without reiterating the exception included in former article 71 (2) TEC (see above). Also article 172 TFEU (previous article 156 TEC) under the title related to 'Trans-European Networks' makes reference to the ordinary legislative procedure. This rulemaking process also begins with a Commission proposal (acting by majority in accordance with article 250 TFEU) dealt with by the EP in a first reading (acting by a majority of the votes cast according to article 231 TFEU), the position of which is communicated to the Council. If the Council agrees (acting by a qualified majority in accordance with article 16 (3) TEU), the proposed act is adopted; if not, both the Council and the Commission positions are forwarded to the EP. If in the second reading the EP approves the Council decision or takes no decision, the proposed act is adopted; if the EP rejects the Council position, the act is deemed not to be adopted. Another possibility for the EP is to propose amendments that are to be communicated to the Council and to the Commission. Rejection of a proposed act or the proposition of amendments requires a majority of component members of the EP. The Council can subsequently approve the EP amendments by qualified majority and thus adopt the proposed act, or activate the Conciliation Committee in collaboration with the EP. The respective procedure is analogous to the one specified in the former TEC. Again, amendments to a Commission proposal, as well as amendments for which the Commission delivered a negative opinion, have to be voted unanimously by the Council. One of the differences to the previous legislative proceeding is the fact that the European Parliament (instead of the Council) is the starting point of the various readings and adopts a *position* instead of an opinion. Pursuant to article 3 of the Protocol on transitional Provisions, the following conditions apply for achieving a qualified majority in the Council (taking into account the changes brought about by EU enlargement):

- Differentiated weighting of votes across member states (3-29 votes).
- At least 255 votes in favor, to adopt acts proposed by the Commission.

[200] See article 294 TFEU.

- In all other cases, at least 255 votes, representing at least two-thirds of the members.

As far as the scope of the EU is concerned, the Treaty of Lisbon has not procured any changes relevant to the area under study. The Union competences related to transport and trans-European networks remain unchanged. Article 4 (2) TFEU now stipulates the principle of "shared competences" in these domains, implying that member states remain engaged in policymaking as long as the EU has not exercised its competence.[201] Moreover, the rules and procedures related to military aspects in general, and to the common foreign and security policy in particular, are still generally based on unanimity; any legislative acts in this field are excluded.[202] In summary, table 31 shows the results of the evaluation of data related to the policymaking phases of SES I and SES II.

Findings

As can be recognized when comparing the two table columns referring to SES I and SES II, the legal foundation defining EU competences in respect of the creation of a Single European Sky has to a large extent remained unchanged in the timeframe during which SES activities have been carried out. With regard to agenda setting, the European Commission always enjoyed the possibility of making legislative proposals in the field of air transport with the consent of the Council (acting by qualified majority), but without any decisive influence from individual member states. As far as decision-making procedures in the relevant EU bodies is concerned, mainly the institutional position of the European Parliament has been strengthened by the Treaty of Lisbon; member state influence through the Council is still ensured, though. Qualified majority voting in the case of the Council and majority voting in the European Parliament are the standard principles applied in the policy areas under investigation, namely 'Transport' and 'Trans-European Networks'. It stands out that the regulatory potential at supranational level in these two functional domains is very much limited to harmonization and standardization and in principle lacks the possibility for the EU to directly intervene in national infrastructures. This, however,

[201] See article 2 (2) lit. g et h TFEU.

[202] According to article 4 (2) TEU national security remains the sole responsibility of the member states; in respect of the common foreign and security policy, see article 24 (1) TEU.

would be an important precondition to promote the structural changes necessary to reduce fragmentation and make the European air traffic management system more efficient. The military perspective, which plays a pivotal role in achieving this goal, cannot be addressed at all without the consent of member states. It becomes apparent that the European Union is to a large extent dependent on member states' cooperation in its endeavor to establish the Single European Sky.

Dimensions	**SES I**	**SES II**
Degree of member state involvement in agenda setting process	Agenda setting by European Commission, but action only with approval of the Council (by qualified majority); no decisive influence on agenda setting by individual member states	Agenda setting by European Commission, but action only with approval of the Council (by qualified majority); no decisive influence on agenda setting by individual member states
Supranational organization's voting procedure	*Council:* Generally qualified majority voting; unanimity if foreign and security policy is concerned, if Commission provides negative opinion, (or if national standard of living, employment, or operation of transport facilities is affected) *Parliament:* Generally voting by the absolute majority of the votes cast, or by absolute majority of component members (particularly for rejections and amendments)	*Council:* Generally qualified majority voting; unanimity if foreign and security policy is concerned, or if Commission provides negative opinion; conditions for QMV adapted following EU enlargement *Parliament:* Generally voting by majority of the votes cast, or by absolute majority of component members (particularly for rejections and amendments)
Functional scope of decision-making	• Air transport • Trans-European Networks (except when affecting member state territory) *Implies EU definition competences in the following areas related to ATM:* • Charging policy • ANSP performance objectives • Safety management policies • ASM/ATFCM principles • ATM operational standards and procedures • ATM technological standards • AIM standards • ANS training standards	• Air transport • Trans-European Networks (except when affecting member state territory) *Implies EU definition competences in the following areas related to ATM:* • Charging policy • ANSP performance objectives • Safety management policies • ASM/ATFCM principles • ATM operational standards and procedures • ATM technological standards • AIM standards • ANS training standards

Table 31: Results of data evaluation for 'regulatory autonomy of a supranational organization'

5.2.2 Density of EU regulation promoting FAB integration

As discussed in sub-section 4.2.7, the indicator for 'density of supranational regulation' is measured in a quantitative and a qualitative dimension. The basis for analysis is the various enactments related to the Single European Sky, as shown in table 23. As a first step, respective provisions are analyzed with a view to their potential to specifically promote the development of functional airspace blocks. Second, the assessment is made whether the provision concerned is aiming at *directly* influencing such developments, or whether an *indirect* impact can be expected. Finally, the sensitivity of policy areas affected by the relevant provisions is examined. Table 32 lists only those enactments where regulation with FAB relevance is found, and provides the information specified. Once more it needs to be emphasized that the focus of this analysis is on provisions within the SES regulatory framework that actively or passively promote the implementation of FABs. This implies that any conditional regulation related to the establishment of FABs is not taken into account. The same is true for pure harmonization efforts that may be necessary prerequisites to enable FABs but do not advance their implementation as such, as well as for cross-border optimizations between neighboring states, which can also be dealt with outside a FAB context through bilateral agreements.

SES I

Under SES I, only one article in the entire regulatory framework is designed to actively foster the introduction of functional airspace blocks: article 5 of the Airspace Regulation. Article 5 (1) unmistakably states that the upper airspace is to be "reconfigured into functional airspace blocks". It is to be noted that reference is made only to the upper airspace, i.e. the gate-to-gate principle of air traffic management[203] is not yet considered. Articles 5 (4) and (5) establish additional restrictions: mutual agreement is required by all member states with responsibility over any portion of airspace affected by the FAB; such agreements need to provide for modification and exit options. The only additional provision that could be considered as moving member states towards designing FABs is article 4 (1)

[203] See sub-section 2.1.2.

of the Regulation on Flexible Use of Airspace, which requires states to establish cross-border airspace use and airspace structures that accommodate the relevant transnational traffic flows. However, this article also fails to integrate the 'big picture'. Hence, it becomes evident that in the context of SES I legislation supranational influence on FAB development is virtually non-existent. Also as far as the functional scope of EU regulation is concerned, all areas of higher sensitivity in accordance with table 6 in sub-section 4.2.2 remain unaffected. There is even no *indirect* incentive contained in the regulations that would promote FAB implementation. Consequently, if full commitment is missing at states level to walk the path towards a more integrated air traffic management system by establishing functional airspace blocks, respective progress is hard to achieve under these circumstances.

SES II

When analyzing the regulations contained in the SES II legislative package, a much stronger focus on FAB evolution is noticeable. However, this focus does not become manifest in a 'top-down'-approach where functional airspace blocks are designed at supranational level and forced upon member states. Rather, the attempt is made to set up a regulatory framework designed to indirectly incentivize states to accelerate FAB development. The only provision aiming at *direct* influence is the new article 9a (1) of the Service Provision Regulation, which sets a clear deadline for the implementation of functional airspace blocks: 4 December 2012. Besides that, several new instruments are introduced which have the potential to advance the progress of FABs. The definition of a performance scheme by means of the revised article 11 of the Service Provision Regulation, and further detailed by the Performance Regulation, may be considered the most important measure in that respect. As was shown above, EU-wide performance targets are defined in the areas of safety, environment, capacity, and cost-efficiency, and have to be adhered to by the performance plans set up nationally or in the context of FABs. The fact that adoption of EU performance targets is done following the regulatory procedure (as briefly described in sub-section 2.2.2) does not constitute a problematic obstacle since none of the voting procedures in any of the institutional bodies involved are based on unanimity. As some performance targets may be quite challenging for a single ANSP or member state to achieve by itself, the performance scheme may push individual states and providers into

cooperation within the framework of functional airspace blocks to enable them to attain the set goals. This is particularly relevant for those targets that are related to a more direct airway structure, as addressed by the environment key performance area, or to a more lenient overall cost-structure in ATM, as addressed by the cost-efficiency target. As was already mentioned, the performance scheme is supported by a new charging philosophy, abandoning the full cost recovery mechanism for air navigation services and introducing the concepts of determined costs (revised article 15 of the Service Provision Regulation) and risk sharing (new article 11a of the Charging Regulation).[204] This puts additional pressure on air navigation service providers to reduce costs and increase cost-efficiency of their operations. The revised charging principles may thus also be seen as an indirect enabler of FAB implementation. Another supportive measure is the introduction of a network management and design function at European level through a new article 6 of the Airspace Regulation (and further specified by the Regulation on Network Management Function). Its tasks encompass the design of the European airway network, the coordination of scarce resources such as radio frequencies, as well as ensuring that the EU-wide performance targets are met. However, the responsibility for designing national route and airspace structures remains with individual nation states. Yet, more supranational authority is vested in centralized air traffic flow and capacity management, with some discretionary power of the central ATFM unit in terms of optimization of network operations, as specified by the respective Commission Regulation on Air Traffic Flow Management. These various activities, aiming at a more central governance of ATM network functions, may create stronger necessities for a coordinated approach in the framework of FABs. Finally, a FAB system coordinator is introduced by article 9b of the revised Service Provision Regulation and assigned a coordinating function between member states to overcome possible differences, thus facilitating the establishment of FABs. Recognizably, the new or revised regulatory provisions at EU level still do not affect potentially sensitive ATM policy areas. In summary, there is no supranational regulation able to actively and directly enforce FAB evolution, but there is a series of instruments working indirectly with the potential to speed up the process.

[204] See sub-section 2.2.6.

SES	Enactment	Articles relevant to promote FABs	Contribution	Sensitivity
I	*Regulation (EC) No 551/2004 of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky*	Article 5, requiring member states to reconfigure the upper airspace into functional airspace blocks that have to enable optimum use of airspace, taking into account air traffic flow, and be justified by overall added value, but only by mutual agreement between member states	**Direct**	Low
	Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace	Article 4 (1) requiring member states to develop cross-border airspace use as well as airspace structures to ensure optimized traffic flows across national borders	**Direct**	Low
II	*Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system (Proposal via COM(2008)388 of 25 June 2008)*	Article 1 (5), introducing a performance scheme (Article 11 of Regulation (EC) No 549/2004)	Indirect	**Econ.**
		Article 2 (5), insertion/revision of articles in Regulation (EC) No 550/2004:		
		• Article 9a (1), requiring member states to ensure the implementation of functional airspace blocks by 4 December 2012	**Direct**	Low
		• Article 9b, introducing a FAB system coordinator	Indirect	Low
		• Article 15, revising the charging scheme introducing the concept of determined costs	Indirect	**Econ.**
		Article 3 (6), introducing a Network Management and Design function (insertion of article 6 in Regulation (EC) No 551/2004)	Indirect	Low
	Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation service	**Entire regulation**, in particular article 14, allowing the European Commission to demand corrective actions by member states if the national/FAB performance targets are inconsistent with the EU-wide targets (indirect contribution)	Indirect	**Econ.**

SES	Enactment	Articles relevant to promote FABs	Contribution	Sensitivity
II	Commission Regulation (EU) No 1191/2010 of 16 December 2010 amending Regulation (EC) No 1794/2006 laying down a common charging scheme for air navigation services	Article 1 (11), introducing a risk sharing mechanism (new article 11a)	Indirect	**Econ.**
	Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management	**Entire regulation**	Indirect	Low
	Commission Regulation (EU) No 677/2011 of 7 July 2011 laying down detailed rules for the implementation of ATM network functions and amending Regulation (EU) No 691/2010	**Entire regulation**	Indirect	Low

Table 32: SES I / SES II enactments potentially promoting FAB development

Findings

It is evident that the density of regulation with the potential of promoting FAB development has drastically increased from the first to the second regulatory package related to the Single European Sky. It appears that the Commission and the EU institutions as a whole have made an additional effort to overcome the impediments identified in the progress review of the SES I period, and to further the evolution of ATM integration in Europe. However, it can also be observed that there is no change to the principle of member states being in charge of setting up and designing the core element of SES, namely the functional airspace blocks. Hence, advancement is bound to rely on the effectiveness of the incentive framework provided by the various additional regulations related to performance, charging, and centralized network management. It will have to be demonstrated whether member states are susceptible to respective mechanisms or attempt to circumvent them by choosing other options to ensure compliance, but which do not fulfill the underlying objectives of the Single European Sky.

6 RESULTING INSIGHTS

Chapter introduction and summary

This chapter contains the final analysis and interpretation of all data collected in the context of this study, beginning with the evaluation of the proposed hypotheses and moving on to an overall assessment of the current situation presented in FABEC in terms of its integrative potential, including proposals for a way forward. It is empirically demonstrated that the preference intensity of influential domestic stakeholders in respect of FABEC integration has an impact on the respective position of national governments. Yet, government agencies also take their own perspective into account. The second liberal-intergovernmentalist hypothesis, which suggests a relationship between a nation state's bargaining power and the (institutional) level of integration cannot be properly evaluated, as respective preference intensities of FABEC member states are too close to each other to be able to make the necessary differentiation. When looking at the supranational level, it can be observed that the European Commission in fact makes extensive use of its competences to advance the development of functional airspace blocks. As the EU does not possess the authority to implement FABs top-down, a framework of indirect regulations has been set up to provide the 'incentives' required for the states to gear towards increased cooperation and integration. Their effect on FABEC has been marginal to date, though. Since FABEC member states support civil airspace redesign and functional ANS integration in specific areas, but currently exclude a centralized structure for air traffic service provision, national ANSPs will continue to exist for the time being. However, instead of finding common arrangements to improve the overall ATM system, national providers appear to be in a state of competition, thereby preventing all forms of enhanced collaboration and integration. The study therefore recommends finding measures and tools to eliminate competition between air navigation service providers and to implement positive incentives to foster cooperative solutions.

6.1 Evaluation of the liberal-intergovernmentalist perspective

6.1.1 The influence of domestic stakeholders on governmental preference structures

To analyze the relationship proposed by the first hypothesis, domestic stakeholders' positions in respect of FABEC integration are compared to governmental preference intensities in the three member states selected for this purpose: Germany, the Netherlands, and Switzerland. It is thereby examined whether the theoretically assumed influencing power of domestic organizations correlates with the extent to which respective positions on specific sub-issues are incorporated in the governmental position of nation states. An organization with high influencing power is expected to be able to have its preferences accommodated in the government's preference structure. Evidently, it is possible that an existing correlation may be coincidental and not linked to any influencing activity. Still, discussions between stakeholders and the relevant governmental institutions can be assumed to be taking place at least where a close relationship or involvement in FABEC processes has been confirmed. The comparison of all four examined organizations per FABEC member state will thus show which issues stakeholders were more successful at convincing government authorities to adopt a specific position on, notwithstanding the possibility that the latter would have come to the same conclusion without any sort of influence. In either case it shows which stakeholder positions could not be persuasively conveyed to the government level.

Germany

When analyzing the (personally expressed) preference intensity of the representative of the German Ministry of Transport (MoT), and assuming – in most aspects – sufficient parallels with the official governmental position, it can be observed that a high correlation exists with the positions as reported by the Ministry of Defense (MoD) and the German air navigation service provider DFS. However, there are still a few discrepancies to either organization. In contrast with the governmental expert view, the DFS representative could

accept a (qualified) majority vote in the FABEC Council, on the condition that there is a possibility of justified veto.[205] Obviously, this is very close to the unanimity rule preferred by both the MoT and MoD, but it is to be considered a deviation from an exclusively intergovernmental approach. The German ANSP even conceives that a decision on civil and military airspace design as well as on the ANSP institutional model could be taken at FABEC level (which is most probably linked to the qualified majority just specified). Furthermore, the DFS expert would be ready to accept a single supervisory authority for FABEC, a notion shared by neither representative of the two ministries. On the other hand, the respondent of the Ministry of Defense would, in contrast to the Ministry of Transport, agree to have both civil and military control center locations defined at FABEC level and to centralize the civil ATS function within an ANSP alliance structure. Finally, both the MoD and DFS could envisage a reduced number of ATC centers for FABEC, while the expert of the MoT was not ready to formulate a respective opinion yet.

It stands out that the representative of the German Ministry of Transport has in almost every instance chosen the more restraining option in terms of integration compared to the various positions provided by the two stakeholders. The only issue where the MoT expert is less restrictive than the MoD is the definition of en-route unit rates, which the latter prefers to keep fully under national prerogative. Conversely, there are three exceptions where the MoT representative displays a more pro-integrative attitude than DFS, concerning the topics of definition of civil ACCs (although explicitly restricted to a unanimous decision) and of functional integration of AIM and training. Hence, the non-accepted items of the Ministry of Defense are better accounted for in the governmental expert position than those of DFS, which may lead to the conclusion that the MoD has a stronger influence on the matter.

As far as the remaining two organizations Lufthansa and GdF are concerned, correlation of views is far lower compared to MoD and DFS, obviously as the Ministry of Transport seems to pursue a rather conservative approach compared to the more pro-integrative attitude of the German main air carrier and the ATCO staff. This is particularly true with regard to FABEC policy enforcement (Lufthansa favoring appeal to EU institutions), the definition of civil and military center locations, and military airspace design. In

[205] See footnote 174.

contrast to GdF, Lufthansa and the German Ministry of Transport share their objection to a single air navigation service provider. Yet, Lufthansa would still like to see some form of integration as far as ATS functions are concerned. Consequently, one may conclude that German stakeholders appear to be able to influence FABEC developments in accordance with their relative influencing power as assessed in the context of this analysis.

The Netherlands

Looking at the preference intensity reported by the Dutch Ministry of Infrastructure and Environment, most parallels exist with the opinions expressed by the Ministry of Defense and LVNL, the national ANS provider. The main differences are that a less intrusive mechanism is chosen on the part of the military to ensure the correct application of policy decisions (mediation instead of arbitration), and that LVNL clearly prefers an alliance model with integrated functions to a single ANSP structure. Both organizations also are of the opinion that civil control center locations should be excluded from the decision scope of the FABEC Council. It must be noted, though, that the respective government position is based on the principles of unanimous decision-making and of keeping at least one national center in the Netherlands. Hence, there is no factual discrepancy on this issue. The same can be said about the position conveyed by the Netherlands Guild of Air Traffic Controllers and the Dutch main air carrier KLM, according to which civil-military cooperation principles, the ANSP institutional setup, and en-route unit rates should be situated within the decision competence of the nation state. Yet, KLM further differs from the ministerial opinion by subjecting military airspace design and military center locations to a Council decision, keeping in mind the airline's preference for a majority voting rule in the governing body of FABEC. Moreover, KLM tends towards the status quo in terms of the supervisory authority model. The Netherlands Guild of Air Traffic Controllers mainly differs from the Dutch governmental position by supporting policy enforcement at European Union level, by generally rejecting performance objectives for ANSPs, and by desiring to maintain today's center configuration in the FABEC area.

It would also appear that correlation between government and interest group opinion increases with influencing potential of the latter. The position of the Ministry of Defense is almost identical to the one expressed by the representative of the Ministry of Infrastructure and Environment, followed by LVNL, where one important discrepancy exists in

terms of the preferred ANSP institutional model. More pronounced differences are observable compared to those organizations attributed a lower influencing capability, namely KLM and NGATC. A clear distinction between the two in accordance with their assessed influencing potential is difficult to establish; although NGATC was rated lowest in terms of its possibilities and opportunities to shape governmental policy, a relatively high correlation exists with regard to the desired functional steps of integration. However, this could also be due to the fact that other more 'powerful' organizations share the same opinion.

It is noticeable that the government's opinion in a few instances even goes beyond the more restrictive attitudes of relevant stakeholders, which seems to be the case in respect of policy enforcement and the ANSP institutional model. This suggests that governmental preferences are not only shaped by the influence of relevant stakeholders, but also by other factors and considerations, complemented by their own appreciation of the situation.

Switzerland

When comparing the positions of Swiss domestic stakeholders affected by FABEC integration to the Federal Office of Civil Aviation's expert opinion on how far integration should progress, a similar picture is presented as in the other two FABEC member states under investigation. The organization with the highest influencing potential, the Swiss Air Force, shows most parallels to the governmental view, followed by Skyguide and subsequently Swiss Intl. Airlines and SwissATCA, both featuring lower influencing capabilities as well as correlation rates. A variance between the positions expressed by the air force and the FOCA representative lies in the observation that the military respondent explicitly excludes decisions about security issues such as military airspace design, location and area of responsibility of military control centers, or civil-military coordination principles from FABEC competence, while the FOCA position includes these topics – though under the condition of unanimity. In practice the outcome is identical, as national interests can be pursued in any case. The only more significant difference might be the fact that the air force would be supportive of a centralized management of civil air traffic service functions in the context of an alliance model. In the view of the FOCA expert, this could only be an option at the very final stage of cooperation and integration within an ANSP alliance. In contrast to FOCA, the Swiss ANS provider Skyguide favors a qualified majority

vote in the Council, the scope of which should also include military airspace design and a single supervisory authority for FABEC. Overall, FOCA tends to take on the more restrictive position of the two principal influencing stakeholders when it comes to transferring decision-making power to the FABEC level, or to functional integration. Hence, compared to Swiss Intl. Airlines and SwissATCA, who both share a similar and more pro-integrative view, discrepancies obviously become more pronounced. In contrast to the FOCA opinion, the airline and the ATCO associations prefer a strong enforcement mechanism for FABEC policy decisions and a single ANSP structure. They agree together that a qualified majority should apply for votes in the FABEC Council. According to the airline, the Council's regulatory scope would be permitted to include military airspace design as well as the ANSP institutional setup. Furthermore, SwissATCA differs from the FOCA view by its desire to implement a 'virtual center' architecture in the initial phase, before even starting a discussion about center consolidation.

In summary, the FOCA position takes into account the concerns and limitations expressed by the two most influential stakeholders: the air force and the Swiss ANS provider. The overall slightly more integrative approach supported by Swiss Intl. Airlines and SwissATCA is only reflected in those areas where it is shared by both Skyguide and the military. This results in a generally cautious and step-by-step attitude towards integration at the level of the Swiss government.

Evaluation of hypothesis

As shown by the above analysis of the three example FABEC member states, the first liberal-intergovernmentalist hypothesis, according to which the more influential domestic interest groups tend to shape governmental preference intensities, appears to hold truth also in the domain of air traffic management. All nation states under examination display a very similar picture in terms of relative influencing power and, consequently, government positions; they correlate to a high degree with the opinions of those organizations possessing regular and intense input channels to governmental authorities, or experts directly involved in the FABEC proceedings, or who take part themselves in FABEC working groups. Perception of concernment seems to be comparable across all investigated stakeholders, with some differences as to the type of concernment. While on the part of the military the impact of FABEC integration appears to be focused mainly on the operational

and administrative level, air navigation service providers could be strongly affected in respect of their organizational setup. Airlines, on the other hand, will see no significant impact in this respect; for them, the operational efficiency gains and cost reductions related to air traffic management stand at the fore. As far as the associations representing air traffic controllers are concerned, potential effects are perceived on a very personal level, referring to possible changes in working conditions or working location. Some staff organizations also have difficulties in expressing an opinion as to how they will be affected, as the direction into which FABEC will develop is still too vague. In any case, since all stakeholders under investigation perceive a certain level of concernment, respective comparisons become less relevant. The deciding factor in measuring influencing power is thus the organizations' institutional ability to shape policy outcomes through direct or indirect involvement in drafting and decision-making processes.

Evidently the military, being part of the government system and thus enjoying co-decisional power in all investigated countries, is able to have all relevant interests related to its areas of activity accommodated in the national preference structure. The same can be said about the air navigation service providers, which constitute the national 'expert organizations' in air traffic management and in this role are fully involved in the development process of FABEC at working level. Lesser influence can be observed from airlines and staff associations. Although the airlines are the customers of air traffic management, for whose benefit the various European integration projects are actually undertaken, their inclusion in the evolutionary process of FABEC is rather low and mainly limited to consultation. The situation looks even worse for the air traffic controllers' associations: Formal consultation on the FABEC Treaty was only reported from Switzerland, otherwise involvement at the domestic (ANSP) level is restricted to mere information exchange. As a result, the views of airlines and staff seem hardly to find their way into the government position on FABEC.

As was discussed earlier, a respective government opinion does not necessarily have to be formed by relevant domestic interest groups; it may develop from its own considerations and other influencing factors not covered by this study. Nevertheless, a certain degree of stakeholder influence may be assumed to exist, as no governmental agency will act fully on its own behalf, particularly not in a complex domain like air traffic management

where respective tasks are executed by specialized organizations. However, in particular the example of the Netherlands shows that the preference intensity of the responsible ministry may go beyond the interests of relevant stakeholders. This leads to the conclusion that governmental bodies are autonomous actors who, despite outside influence, have their own perspective on matters, which influences their opinion-making. This also has to do with the fact that the 'principal-agent' relationship is not directly applicable in the specific case under study.[206] Taking into account this constraint, the validity of the first liberal-intergovernmentalist hypothesis may still be supported.

6.1.2 The relative influence of nation states on the level of FABEC integration

When comparing the preference intensities communicated by the four state representatives with the level of institutional integration as determined by the FABEC Treaty, no clearly differentiable influence pattern can be recognized that would correspond to the assessment of relative bargaining power performed in sub-section 5.1.4. Such a differentiation is already very difficult due to the fact that none of the investigated states is willing to allow the FABEC Council supranational authority. As far as policy enforcement or the regulatory scope of the Council is concerned, certain individual discrepancies exist between government positions and the factual situation in the treaty, both in the direction of more and of fewer competences assigned to the FABEC level. However, these discrepancies are present across all four FABEC member states, irrespective of the theoretically attributed bargaining power.

In principle it can be asserted that the FABEC Treaty includes those regulatory areas which should, according to a majority of states, be covered by the competence of the Council, while areas that a majority of states do not wish to have covered are outside of the scope. This does not imply that respective decisions were taken by a majority vote; even the highly sensitive issue of including the military dimension in airspace design, which was only supported by half the states, is accommodated in the treaty. This is relativized by the fact that the extent of the regulatory scope is less significant when ultimately subjected to unanimous decision-making, as this always permits any contracting state to

[206] See sub-section 1.2.2.

bring its individual interests to bear if necessary. As regards issues of low sensitivity, the only area not addressed by the treaty is ANS staff training, although during data acquisition for the present study a common regulatory approach was supported by all interviewed states. It must be presumed that training was either seen as an ANSP cooperation matter without direct operational implications, and thus not worth of being included in the treaty, or as a field which should be regulated at EU level. Another topic of different state views is the mechanism to ensure application and/or implementation of FABEC policy decisions, where the treaty stipulates an arbitration procedure if the FABEC Council is unable to find a solution. Some states point to the fact that FABEC members take unanimous decisions and thereby commit themselves to respective actions, rendering enforcement obsolete. Arbitration is thus seen as a means to resolve potential conflicts of interpretation rather than as an actual 'enforcement' mechanism, and one which should only be applied as a last resort.

Obviously, the FABEC member states under investigation share a very similar preference structure as far as cooperation and integration *in institutional terms* are concerned. It may thus be concluded that, during the drafting phase of the FABEC Treaty, an actual 'negotiation' situation most probably did not arise where individual negotiation potentials would have become manifest. It is therefore not possible to provide a well-grounded evaluation of the second liberal-intergovernmentalist hypothesis. It can only be pointed out that the present agreement accommodates the requirements of those states that possess a generally lower preference intensity with regard to FABEC integration, given the particular fact that the treaty is fairly high-level and does not yet specify any (functional) details. It is still conceivable though that negotiation strategies may take effect in specific FABEC working groups or later within the various committees working for the FABEC Council, where more tangible options of cooperation and integration are discussed. These processes, however, are not covered by this study.

6.2 Evaluation of the rationalist-supranationalist perspective

In order to make a statement about the relationship proposed in the third hypothesis, regulatory autonomy of the European Union institutions and the corresponding regulatory activity in respect of the implementation of the Single European Sky during the phase of the first regulation package is compared with the phase encompassing the second package. The hypothesis is sustainable if an increase in regulation that has the potential to promote FAB integration can be identified during the second phase, even without any addition of regulatory competence at the supranational level.

Analysis of acquired data shows that the regulatory density possibly promoting integration in the framework of functional airspace blocks has indeed considerably increased from the first to the second Single European Sky regulatory package. This even occurred without adding any competences to the European Union institutions in terms of agenda setting, decision-making power, or functional scope, pertaining to the domain of air transport and air traffic management. Particularly the European Commission made extensive use of its existing authority to come up with creative proposals on how to advance the development of FABs. It stands out that except for the requirement to establish cross-border airspace use and functional airspace blocks by the deadline of 4 December 2012, no other direct interventions aimed at FAB creation were formulated in the SES II regulations. Obviously the Commission was unable to propose regulations that would deny member states their right to explicitly agree to a transnational network activity affecting their territory or national security issues. Instead, the Commission chose to arrange a series of indirect incentives that are expected to foster a more integrative approach. A powerful tool in this regard may be the newly introduced performance scheme in combination with the revised philosophy on charging for air navigation service provision. The Commission managed to implement rules stating that the Commission has the power to set European-wide performance targets that the member states are required to adhere to when drafting their own performance plans, and even managed to have the final say on whether the national plans are adequate to attain that goal. This is a remarkable step, as it provides the Commission with the authority to exercise a certain pressure upon member states, the more so as the

adoption of performance targets cannot be vetoed by any of the member states. All targets relating to cost-efficiency, capacity, and environment (in terms of horizontal flight efficiency) have the potential to drive states and air navigation service providers towards cooperation and integration. The overall cost base of air traffic management can only be noticeably reduced if ATM functions, ancillary/support services, and infrastructure are consolidated and centralized. This is supported by the abolishment of the full cost recovery principle, a long-standing favorable tradition removed by the Commission, and the linkage of anticipated cost bases to the performance scheme, putting providers under enormous cost pressure. Improving airspace and control sector design to better accommodate transnational traffic flows, which requires cross-border operational arrangements, can increase capacity. Better horizontal flight efficiency would mean more direct routings and a corresponding hub-to-hub route network that is only achievable when applying a more comprehensive perspective beyond nation states. Network and coordination functions at European level complement these measures. They provide additional institutional bodies, which are designed to continuously push for solutions optimizing the overall ATM network. This can almost be looked at as a constant dripping intended to wear away the stone of resistance to cooperation and integration.

It thus appears that rationalist supranationalism has a strong point in suggesting that the European institutions and in particular the European Commission are able to exploit their competences in a way that states find themselves confronted with new regulations, designed to advance integrative processes which are hard to escape from and which are introduced in the framework of regulatory structures that can be rightly described as 'path dependencies'.[207] The Commission has proven its capacity to "define and pursue a politically relevant agenda on an ongoing basis",[208] by formulating new proposals to achieve the objectives of the Single European Sky in a period over more than seven years. Yet it must be noted that respective regulations in the specific case of air traffic management integration do not directly tackle the sensitive topics, but attempt to do it circuitously. It is evident that it is not possible for the European institutions to simply expand the authority vested in them by the EU treaties. This is particularly relevant in the policy domain under

[207] See sub-section 1.2.4.

[208] See Stone Sweet/Sandholtz (1997): 304.

study, as real progress is only possible by addressing issues that are under national prerogative. Consequently, it is not certain that the requested impact will in fact materialize, as states may find ways to fulfill the SES regulations without actually walking the intended path of integration. In summary, though, based on these results, the proposed hypothesis is also applicable to the ATM sector and can thus be sustained.

6.3 Assessment of the integrative potential with regard to FABEC

6.3.1 Supranational contribution

The results of this study have shown that European air traffic management integration in the framework of functional airspace blocks, in particular with regard to FABEC, is subjected to various and partially opposing influences. On one side, an increasing density of European Union legislation and regulation puts pressure on EU member states and affiliated countries to foster cooperation and integration through FABs. The European Commission, which, according to the EU treaties, does not possess the legal authority to superimpose a functional airspace structure on member states, chooses a more indirect approach by addressing the air navigation service performance to be achieved by ANS providers in the areas of safety, capacity, cost-efficiency, and environmental sustainability. The most effective regulatory tool to that end is the SES Performance Regulation in combination with the revised charging scheme. The requirement for national air navigation service providers to determine their cost bases and unit rates in advance and to subsequently bear potential excessive costs, already enhances cost-awareness in ANS operations. Moreover, the setting of binding EU-wide cost-efficiency targets, which national targets have to be consistent with, might over time force ANSPs to enter cooperative or even integrative arrangements with other providers to be able to meet respective goals. The same is true for the environment and capacity targets, which at some point may no longer be achievable by individual providers in isolation, as this will require the reduction of airspace and control sector complexity and the introduction of a simpler and more direct airway structure. A different situation is presented for the key performance area of safety, the proposed indicators of which can be adequately complied with in the national context. More supportive regulations have also been adopted at EU level, relating to the establishment of network functions designed to facilitate a pan-European approach to ATM by coordinating FAB interfaces, or by ensuring effective air traffic flow management. Yet, although respective activities may generate additional expectations towards states, they do not share the ‘enforcing’ character attributed to the performance scheme.

6.3.2 Aggregation of national preferences

It is evident that the main actors in respect of FAB integration are the nation states. National sovereignty dictates that it is essentially they who decide to what extent cooperation and integration are pursued and which ultimate shape functional airspace blocks will assume. Although the present Single European Sky regulations are able to set common standards and generate incentives to support integration, no FAB model can be forced upon the states. It is therefore relevant what stance national governments take towards functional airspace blocks. The example of FABEC demonstrates that, in general, nation states maintain a cautious attitude. The fact that unanimity prevails in FABEC Council voting procedures is a clear indication that a lot of nationally sensitive issues are affected by FABEC integration. The main topics identified here are military airspace design, the institutional setup of supervisory authorities and air navigation service providers, and control center infrastructure.

As for the supervisory model, the investigated FABEC member states share the belief that national supervisory authorities must still be able to execute the sovereign tasks assigned to them, such as specific regulatory functions. They therefore propagate a rather cooperative arrangement, or one where only the supervision part is done at FABEC level. Only the Netherlands would accept a single authority, but also points to the fact that domestic political access to the organization needs to be ensured. Noticeably, the single air navigation service provider is seen as a possible very-long-term option by all FABEC states except Germany. However, at this time, all nations support a gradual and step-by-step approach into a more integrated structure, leaving air traffic service functions out of scope for the moment. When it comes to the issue of control centers, government positions become even more conservative. While the smaller nations agree to some sort of reduction whilst wishing to maintain at least one center facility under national authority, the bigger nations question the usefulness of consolidation or point to the lack of decision criteria for such a step. Overall, states in the current phase give the impression that they are strongly concerned with assuring that national sovereignty is not unduly compromised by FABEC evolution.

The governmental opinions appear to be aligned to a large extent with those stakeholders in the system having regular access to decision-making structures and who are able to strongly influence developments, namely the national defense authorities and the air navigation service providers. Although national military organizations recognize the opportunities offered by FABEC, such as the possibility to establish larger cross-border training areas, they insist on remaining in charge for all decisions related to their area of activity. Hence, there is a clear preference for unanimity in the FABEC Council. In this respect, military airspace design and the definition of military (tactical) control infrastructure are of particularly high sensitivity. On the other hand, all three national military representatives interviewed for this study quite vigorously supported more progressive steps of integration in *civil* air traffic management. The same is true regarding integration, or at least co-location of civil and military ATS units. It is evident that national security considerations still play a major role in contemporary Europe.

When examining the different en-route air navigation service providers in the FABEC area, a strong focus on individual 'business' interests is perceived. Although a majority of consulted ANSP representatives is supportive of a qualified majority vote in the FABEC Council, an optional veto is still seen as necessary for important decisions. It must be assumed that the latter refers to issues related to the ANSP institutional setting, control center infrastructure, or airspace design, which all appear to be sensitive to providers. This assumption is derived from the fact that all analyzed ANSPs show an explicit preference for an alliance model where the execution of air traffic service provision is left with individual providers. There is also no support for a single FABEC ANS provider, not even in the long run. Only DSNA from France could envisage such an option in the future, but is aware of the social sensibilities involved; these became manifest during the industrial conflicts related to the respective intentions announced by the French minister of transport in the beginning of 2010.[209] Hence, also in light of the present *quasi*-unanimous state support for the alliance setup, it may be expected that national ANSPs will continue to exist in the foreseeable future and that cooperative or even integrative arrangements will only be considered in specific domains still to be defined. Discussions about the implementation of a 'FABEC Entity', within which certain functions could be centralized, are ongoing. The

[209] See sub-section 5.1.3 above.

preference structure expressed by ANSP representatives coincides with the observations of current developments in the FABEC program: some progress is visible, mainly in areas of low sensitivity where cooperation is considered to be mutually beneficial. This is partially the case in the domains of ATM technology and ATS staff training. Yet, respective steps are limited to bi- and multilateral collaboration, aiming instead at harmonization or the use of common tools, without indicating the intention to head for more integrated solutions. It thus appears that air navigation service providers are generally protective and seem to be reluctant to 'surrender' any function related to their business activity, at least not devoid of compensation.

The consequences of this attitude also become apparent in the ongoing airspace redesign projects. As stated earlier, air navigation services are essentially financed through en-route charges based on the number of flights passing through the area of responsibility of an ANS provider. Consequently, there is little incentive to amend airspace or airway structures at the risk of losing traffic shares. This creates a competitive situation between air navigation service providers in cross-border areas, which, apart from the military and sovereignty issues, provides an additional impediment to integration and ultimately to a functional airspace and route design. From this viewpoint there is also a risk that the combination of the supranational performance scheme with the air navigation service providers' focus on individual interests could produce unwanted effects. This may particularly be the case in respect of the performance target related to cost-efficiency: instead of reducing costs by creating synergies through collaboration and integration, it appears that individual providers attempt to achieve the financial performance objectives on their own.[210] Even though the improvement of individual cost-efficiencies may be desirable, the potential excessive cost-cuts resulting from such activity could over time become critical in a safety-relevant domain like air traffic management. Moreover, although the consistency assessment of performance plans carried out by the SES Performance Review Body seems to be conducted in a diligent and fair manner, taking into account a variety of factors such as the interrelation between capacity and cost-efficiency,[211] a cost-related target may at the present stage not adequately support integration as considerable initial investments are re-

[210] The FABEC performance plan only contains an aggregation of cost-efficiency targets set out in the respective national performance plans (see FABEC 2011a: 42ff.).

[211] See Eurocontrol (2011).

quired to implement corresponding structural changes. On the contrary, it might actually exacerbate the 'individualist' attitude of ANSPs.

Obviously airspace users, in particular commercially operating airlines as the actual customers of air traffic services, have a strong interest in a cost-efficient air traffic management infrastructure. This is both confirmed by the statements provided by the air carriers interviewed in the context of this study and by the position of the Association of European Airlines (AEA), predominantly addressing ATM costs in conjunction with the SES performance scheme and emphasizing the need for short-term stabilization and drastic reduction of unit rates in the longer term.[212] This may explain the European Commission's focus on cost-efficiency during the first reference period. It was mentioned earlier that the AEA was a significant promoter of the Single European Sky initiative and thus appears to be an influential stakeholder at European Union level.[213] However, in the domestic context, airspace users seem to have a lesser impact on the governmental attitude towards FABEC: the airlines' supranational approach to air traffic management is currently not supported by the states, and involvement of airspace users in FABEC proceedings is consultative only. It must therefore be presumed that airlines turn to their transnational body to foster the interests of their sector.

The same is true for the operational staff at the sharp-end: the air traffic controllers. Due to their lack of sustaining influence at the national level, they have organized transnationally through the MARC (MOSAIC ATM Regional Coordination) group, which represents both controller and technical staff associations in every FABEC member state and is attempting to establish a social dialogue at FABEC level.[214] In accordance with the so-called MOSAIC principles, the ATCO associations are commonly in favor of a single air navigation provider, established in analogy to the Eurocontrol model as an international organization under full state control. Besides the fact that Eurocontrol operates a highly efficient en-route ATS infrastructure in a complex airspace (Maastricht UAC),[215] the ob-

[212] See AEA (2010): 2.

[213] See sub-section 1.3.1.

[214] The Terms of Reference for the FABEC Social Dialogue Committee are in the final stage of development. Before final adoption, however, some representation issues have to be resolved between MARC and the European Transport Workers' Federation (ETF), which also has members working in air traffic management (remark from the author).

[215] See Eurocontrol (2010c).

jective is also to maintain favorable employment conditions within an international organization. Thus, the MARC/MOSAIC concept is mainly to be understood as a counter-proposal to a competition-based system of air navigation service provision, which might not only "induce unacceptable trade-offs in the field of safety versus economics" (MARC/MOSAIC 2008: 0-2), but also be detrimental to the working environment of ATM staff. The MOSAIC Framework Document also advocates the establishment of a 'virtual center' setup, which entails holding on to the present center infrastructure in order to avoid forced staff transfers and possible related social conflicts (*ibid.*, 3-53). However, although a majority of states could envisage a single provider as a very long-term option, the staff associations seem not to have been able to convince all FABEC member states to at least make a declaration for a move in that direction. Their influencing capability thus also appears to be minor *beyond* the domestic context.

An exception to the conclusion related to staff associations must be made in respect of trade unions operating in France. Although not explicitly analyzed in the context of this study, reports from the French government and air navigation service provider suggest that these unions do have a significant impact on decision-making. Whereas by the time of this analysis the majority of air traffic controllers were grouped under the organization supporting the MOSAIC principles, other unions also representing (a minority of) ATCOs strongly opposed respective intentions, not without success.

6.3.3 Overall assessment of integrative potential

Having observed aggregated preference structures of governments and relevant stakeholders within the FABEC framework, one must conclude that for the time being the environment appears inhospitable to foster support of more 'radical' integrative moves in the area of air traffic management, which go beyond mere harmonization efforts. Although most governments of FABEC member states could envisage a single air navigation service provider for FABEC in the long-term future, there seems to be a general consensus among states that integration of air navigation service provision should be pursued in incremental steps, beginning with cooperative arrangements in functional domains of lower sensitivity and leaving air traffic service tasks out of scope. Also the consolidation of en-route control

centers remains subject to national decision-making and is assumed to only be an option in states with two or more existing facilities. FABEC governments agree, however, that there is a need for airspace redesign, at least in cross-border areas, and for implementation of shorter routes, whilst always taking into account military requirements. However, the 'competitive' situation that national air navigation service providers perceive neither facilitates the process of promoting advanced cooperation and integration, nor assists the functional redesign of airspace. It is uncertain whether the Single European Sky performance scheme in its current form will be able to overcome these hurdles, considering the efforts made by national ANSPs to realize performance optimizations at the domestic level; as was stated above, it may even exacerbate the competitive situation between ANSPs. One must bear in mind though that the performance framework is only a very recent regulatory measure of the European Commission, which may not have reached its full potential yet and is open for further development and improvement. In addition, the willingness of national governments to achieve operational benefits and at least some sort of functional integration may offer an opportunity to set things in motion. Moreover, the institutional setup of FABEC and the ongoing cooperative arrangements bring people from different ANSPs together and cultivate the formation of mutual trust, which may, over time, facilitate further cooperation as well as integration.

6.4 Possible way forward

In light of the above observations, the question arises which way forward could be pursued in order to be able to achieve the principal objectives of the Single European Sky. Just as a reminder, the main purpose of integration in the field of air traffic management is to enhance safety and ATC capacity by designing control sectors and airway networks of lower complexity in accordance with traffic flows, thus also increasing flight efficiency and reducing environmental impact. Furthermore, the goal is to reduce the costs of air navigation service provision by promoting the consolidation of ANS-related functions.

It must be concluded from the findings of this study that the business competition obviously prevailing between governmentally 'protected' national air navigation service providers constitutes a major stumbling block in terms of effective cooperation and integration within the FABEC framework. It is understandable that the highly autonomous ANS organizations are eager to retain or even expand their share of business activities and that they are not necessarily willing to accept any disadvantages or losses in this regard without due compensation. Evidently this particularly concerns issues where revenues are at stake. Hence, ways have to be found to eliminate competitive thinking and to establish 'positive' incentives to foster cooperation between ANSPs, whilst accommodating the requirements of states related to sovereignty. From an operational point of view, one of the key issues is to remove the notion of 'competing for traffic', which complicates the redesign of airspace, route structures and ATC control sectors. The FABEC feasibility study already anticipated this problem and suggested that the entire FAB should constitute a single charging zone with a single unit rate (FABEC 2008a: 66). To achieve this, the cost bases of all participating ANSPs would be pooled to establish a single cost base for the charging zone, and the total cost base divided by the number of service units within the FABEC area to calculate the common unit rate. Respective revenues would then be distributed among ANSPs according to their cost bases, irrespective of traffic share. Hence, the delineation of the route of flight would no longer be a revenue-defining factor, enabling the establishment of a functional airspace and airway structure independent of na-

tional boundaries. However, as described earlier,[216] the main disadvantage with this concept is that current differences between national cost-efficiencies, unit rates, and complexity factors are blurred. Since traffic revenues would be 'pooled' at FABEC level and subsequently paid out to ANS providers based on their individual costs for service provision, ANS organizations would find themselves in a new competition for their share of revenues and, according to the proposed distribution principle, might even be incentivized to maximize their costs. Moreover, airspace users mainly operating in relatively 'cheap' airspace today would be penalized. It is thus not surprising that IATA, the International Air Transport Association representing some 230 airlines worldwide, is of the opinion that "a single en route unit rate should only be introduced when the FAB has proven to deliver quantified cost- and flight efficiency benefits to the users" (IATA 2010). However, as the findings of the present study suggest, the contrary may be the case at least in terms of flight efficiency: airspace design improvements may not materialize without introducing a single FAB unit rate.

Hence, the challenge is to implement a single unit rate in order to remove traffic competition while at the same time ensuring that progressive performance improvements and cooperative behavior are stimulated amongst national ANSPs. Whereas the calculation of a single unit rate and subsequent revenue distribution would *initially* have to be based on current individual cost bases, an option could be to link the future allocation of revenues to a specifically defined performance level to be met by air navigation service providers. Such a *'Best-in-Class'* standard would have to address all relevant performance areas (safety, capacity, environment, and cost efficiency) in a balanced way. In respect of *safety*, one criterion could be that adequate investments in the 'core business' of air traffic service provision are constantly assured and not subjected to excessive cost-cuts. This would include continued technological evolution and modernization in accordance with the European ATM Master Plan of SESAR, as well as appropriate financial compensation of key operational staff carrying out safety related tasks, such as ATCOs or ATSEP,[217] in order to ascertain sufficient quality and motivation of personnel. Furthermore, to protect staff from potentially safety-critical over-productivity, regulation related to maximum

[216] See sub-section 3.3.2, 'Common charging'.

[217] See Eurocontrol (2002b): 8ff.

working hours and minimum rest time should be in place, based on traffic volumes and complexity. Another criterion could be a high ratio of 'systemically' safe solutions versus human-based mitigations implemented in ANSPs following safety risk assessments.[218] This would promote a safety-sustainable development of the ATM system. With regard to *capacity* and *environmental efficiency*, the aspired standards should be the ability of an ANSP to accommodate the expected traffic volume within its airspace by providing the required technology and manpower, and the organization's assistance in implementing an optimized route network based on traffic flows (and military needs). Complexity is also to be taken into account in this respect, as obviously the effort to ensure satisfactory capacity increases with complexity. This could be done by determining a prospective complexity factor evaluated on an EU-wide or a FAB-specific *functional* 'to-be' route structure, which also incorporates military airspace requirements. The establishment of cooperative solutions with neighboring ANSPs in terms of airspace and control sector design in accordance with traffic flows could also be rewarded. Since the overall number of ATC sectors existing today is not expected to decrease significantly when arranged within a functional airspace block,[219] no ANS provider should be forced to relinquish control sectors to other providers. To allow for the seamless and efficient handling of air traffic between adjacent centers and possibly for the application of dynamic sector configurations in accordance with changing traffic patterns, interoperability of technical ATM systems needs to be ensured, the pursuance of which could also be assessed when evaluating 'Best-in-Class' achievements. Interoperability does not necessarily entail installing the same hardware products in all center facilities, but the availability of identical system functionalities and tools, as well as the capability of systems to interconnect and communicate with each other. Of particular importance is the possibility to electronically coordinate flights between neighboring sectors and to extend the planning scope of arrival management tools, the function of which is to determine approach sequences into major airports and to provide sequencing instructions to upstream sectors. Given the fact that almost all stakeholders interviewed in the context of this study are supportive of a high level of interop-

[218] The goal of 'system safety' is to improve the safety level by identification of safety related risks and eliminating or controlling them by design and/or procedures (FAA 2000). In contrast, human-based risk mitigation requires specific human interaction to ensure a safe outcome, which does not take into account human limitations.

[219] See Eurocontrol (2005): 36f.

erability between ATM technical systems at FABEC level, this should not raise excessive difficulties. By establishing interoperability between ATS facilities, considerable improvements in terms of ATC capacity and flight efficiency could be achieved without the immediate need for ANSP or center consolidation. Finally, as regards *cost-efficiency*, the 'Best-in-Class' standard would be met by those ANSPs reducing their support costs by means of enhanced mutual cooperation and by consolidation of related structures and services in the FAB framework, such as in areas of CNS, AIM, or training. The governments of FABEC member states should actively promote respective steps, as they seem sympathetic to an alliance structure with most of these functions integrated. Depending on the experiences made in the outline of such arrangements, and taking into consideration the possible continuous development of mutual trust, 'spill-overs' may later occur into more sensitive areas, until ultimately a single provider might emerge in the distant future, if functionally advisable and supported by relevant stakeholders. To summarize, the following criteria could possibly be used to define 'Best-in-Class' in air navigation service provision:

Key performance area	**Possible criteria**
Safety	Continuous investments in ATS provision are ensured (staff and technology)
	Regulation is in place to protect staff from over-productivity
	Systemic safety is promoted
Capacity / Environment	Capacity is ensured to accommodate anticipated traffic volumes (taking into account the level of complexity based on a 'to be' functional route structure)
	The implementation of a functional route structure is supported
	Cooperative solutions regarding airspace and sector design are promoted
	Interoperable technology between centers is promoted
Cost-efficiency	Support costs are reduced through cooperative arrangements

Table 33: Possible options for 'Best-in-Class' standards in ANS provision

Obviously, the criteria described above are ideas only and far from being conceptually mature or even operationalized. Nevertheless, a 'Best-in-Class' approach could provide an opportunity to break up the current deadlock and promote the kind of cooperation and integration between air navigation service providers that seems to be missing. It becomes evident, though, that today's traffic-based revenue allocation mechanism needs to be revised to create a basis for incentivizing ANSPs to strive for the aspired performance levels

in the different areas. This, in turn, implies central ‘pooling’ of revenues and the introduction of a single unit rate to avoid distortions of traffic flows by unit rate differentials. Consequently, airspace users would have to temporarily put up with certain additional costs caused by the single unit rate, in order to allow for further progress, which should lead to an overall cost-reduction in air traffic management over time. In the author’s view, the European Commission should have the necessary tools at its disposal to promote respective changes: Member states could be mandated by a revised Charging Regulation to establish single unit rates for functional airspace blocks; ‘Best-in-Class’ criteria could be integrated in the SES performance scheme; the SES Performance Review Body could be tasked with assessing individual performance of ANSPs and their compliance with ‘Best-in-Class’ standards; the Central Route Charging Office of Eurocontrol could distribute the revenues accordingly. As the proposed incentive model is not expected to affect national sovereignty or military requirements, state support should be attainable. The prospect of creating new and possibly larger cross-border military training areas in regions of low complexity may even have a tempting effect on national defense authorities. In order to keep changes manageable, it makes sense to continue striving for cooperative arrangements in the context of existing FAB initiatives. Yet, it is obvious that all efforts towards an optimized airway and sector structure and towards an interoperable ATM technology should not be limited to a FAB’s airspace, which ultimately is also delimited by national boundaries, but should be extended instead to adjacent functional airspace blocks in close coordination with the SES Network Manager and taking into account SESAR developments. Otherwise, functional airspace blocks just risk becoming a new layer of fragmentation.

CONCLUSION

The present study has aimed at answering the following question: 'Is the European Union successful in its promotion of the establishment of functional airspace blocks within the policy area of air traffic management?' Since the development of FABs may be considered a process of political integration, the potential factors influencing such processes were analyzed in respect of one of the most significant FAB projects, the Functional Airspace Block Europe Central (FABEC). Influencing factors were derived from two theories representing opposite views as to whether integration is more predominantly driven by the European Union or by the individual nation states.

The investigation conducted allows drawing the main conclusion that, with regard to implementing functional airspace blocks, the EU is considerably limited by the sovereign interests of states. The Union lacks the necessary legal basis to take supranational decisions affecting national airspace or infrastructure. However, supranational pressure in favor of FAB integration is steadily growing, and avoiding it becomes increasingly difficult for nation states. In accordance with the rationalist-supranationalist theory by Stone Sweet and Sandholtz (1997), it was demonstrated that the European Commission searches for ways to make extensive use of its regulatory capacity even in the absence of additional competences, thereby gradually reducing the nation states' room for maneuver. The two subsequent timeframes under analysis, referred to as SES I and SES II, have not only seen a quantitative increase in regulatory density with a potential of advancing FAB development, but also the emergence of an intelligent framework of incentives which may have the capability to push states into integrative solutions without having to directly touch on sovereignty. It can thus be acknowledged that the phenomenon of supranationally driven institutionalization, as postulated by the rationalist-supranationalist account, is in fact present in the domain of air traffic management.

Yet, since the ultimate decision as to the form and to what extent integration will be effected lies with the nation state, the final outcome is still unclear. Based on Moravcsik's (1993) liberal intergovernmentalism, this study has compared relative influencing power of various domestic stakeholders assumed to be relevant in the area of ATM, namely national defense authorities, air navigation service providers, major air carriers, and staff associations representing air traffic controllers, and examined their impact on governmental preference intensities related to cooperation and integration. All three domestic settings under analysis have displayed very similar influencing patterns. Government positions largely correlate to those of the military and the ANS providers, which are assessed to be most influential due to their strong institutional involvement in FABEC matters. The lack of effective inclusion both of airlines and ATCO associations at the domestic level (with the exception of French trade unions) compels these two groups of stakeholders to seek more active representation of their interests through transnational bodies, which mainly address their lobbying activities towards FABEC and the SES institutions at EU level and thus have a lesser impact in the national context.

When looking at governmental preferences, the foremost requirement is to maintain national supremacy on military issues, be it airspace or infrastructure. Furthermore, far-reaching steps of integration in ANS provision are not supported at this time. Whilst centralization or consolidation of functions would be endorsed in the areas of AIM, CNS, training, or other supporting services, the execution of air traffic service tasks, which includes air traffic control services, is to remain under national control. A single ANSP could be a long-term option for a majority of FABEC states, but is not accepted unanimously. However, all states subjected to this analysis are in favor of a functional airspace design for civil air traffic in order to increase capacity and improve flight efficiency. The FABEC Treaty, the founding document of the Functional Airspace Block Europe Central, also reflects these rather conservative state preferences. Although the decision-making scope of the agreement includes quite sensitive areas, such as military airspace design, the unanimity principle applied for decisions provides all contracting states with the opportunity to support or reject functional steps of integration as they see fit.

In accordance with Moravcsik (1993), the study also attempted to determine differentiations in bargaining power between FABEC states which might have become manifest

in the treaty. Apart from the fact that respective disparities were difficult to identify, a higher correlation rate between the treaty and one specific state could not be found. Generally, the current FABEC Treaty is rather 'high-level' and of an open nature; it makes no reference to tangible steps of functional integration. From this point of view, one could assume that the attitude of more conservative FABEC members was accommodated. However, since all interviewed state officials required voting in the FABEC Council to be unanimous, this differentiation is irrelevant. It is expected that relative bargaining power will play a more decisive role at the time when more specific integrative steps are under discussion.

Within the context of this governmental preference structure, which supports the continuous existence of national air navigation service providers, ANSPs find themselves in an environment which is dominated by competition rather than cooperation. The prospect of 'integration' seems to create apprehension: potentially ANSPs have to face restructuring which may result in the loss of organizational units or business opportunities. Consequentially, although a widespread institutional network has emerged in the framework of FABEC to enable cooperation and seek common solutions, there are recurring obstacles which hamper the development of substantial outcomes. Cooperation appears to be successful in only those areas where benefits are perceived to be mutual. Yet, these areas hardly offer the required optimizations leading to the increase of safety and capacity, or to cost-reduction. In particular, competition for traffic volumes and corresponding revenues poses an impediment to a traffic-flow oriented route and airspace structure, as redesigned airways may no longer feed through a provider's airspace.

It is obvious that under these circumstances the establishment of functional airspace blocks becomes very difficult. Despite the quantitative and qualitative intensification of supranational regulation, tangible progress in FABEC integration is barely noticeable. There is a risk that the deadline of 4 December 2012 may be achieved in formal and institutional, but not in functional and operational terms. However, consideration needs to be given to the fact that the recent regulatory initiatives, which have introduced new performance and charging mechanisms, have only been in effect for a short period of time. Furthermore, a more cooperative culture may emerge within the FABEC context simply by increased personal interactions and trust-building. Nevertheless, the European Com-

mission should consider additional measures to in particular eliminate competitive thinking and promote cooperation between providers. The introduction of a revised revenue allocation mechanism (based on a FAB single unit rate) in conjunction with a 'Best-in-Class' standard for air navigation service provision, which should aim at positively incentivizing cooperation, could be one step in that direction. It thus seems that the European Commission will be required to exploit additional avenues to ultimately achieve the goal of a functional air traffic management system for Europe.

Theoretical considerations and further research

It was demonstrated that both theoretical strains applied by this study, liberal intergovernmentalism and rationalist supranationalism, appear to contain valid assumptions that are also applicable to integration processes in the domain of air traffic management. Notwithstanding the discussion conducted in sub-section 4.1.3 on external validity of derived results, one may conclude that neither concept alone is able to fully explain the factors and influencing variables involved in this highly specific policy area. Hence, it seems best from a theoretical point of view to abstain from the debate over whether integration is more driven by the EU or by the nation states and to accept that both levels have a considerable impact on respective proceedings. A theory combining the two perspectives should concentrate on analyzing the conditions under which one or the other actor is expected to possess greater potential of being dominant in the process. In particular the role of the European Commission, exhibiting a remarkably autonomous, proactive and strategically relevant behavior, should be put in focus when discussing the logic of institutionalization at the supranational level.

Although the present study has examined probably the most significant functional airspace block in terms of air traffic density and thus relevance to the European air transportation system, a respective analysis of other ongoing FAB development programs could still be useful both from a theoretical and from a regulatory point of view: Underlying environmental and influencing factors assisting or constraining integrative processes may differ considerably between FAB initiatives. Supranational regulation may have a stronger impact on certain FABs, as for example not every functional block of airspace may display the same competitive situation between ANSPs as appears to be the case in FABEC. Moreover, relative bargaining power may play a more prominent role when it

comes to finding integrative solutions. Consequently, it is conceivable that regulatory action taken at the level of the Single European Sky to foster integration needs to accommodate varying integrative potentials among functional airspace blocks. It is advisable, though, that the focus of analysis should remain on those FAB projects where airspace and ATM capacity will, over a mid- and long term period, become a limiting factor in the face of growing air traffic.

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About the author

Siegfried Ladenbauer was born in 1973 in Zurich (Switzerland). Parallel to working as an air traffic controller at the tower and approach control unit of Zurich airport, he completed his studies of Political Science, International Law and Swiss Public Law at the University of Zurich in 2005. His Master's thesis has already dealt with the topic of air traffic management integration in Europe (Integrationsbestrebungen auf dem Gebiet der europäischen Flugsicherung: Eine intertemporale Analyse der Erfolgsfaktoren des "Single European Sky" im Vergleich zu "EUROCONTROL").

Next to being an operational ATCO and instructor, Siegfried Ladenbauer was the president of one of the three associations representing civil air traffic controllers in Switzerland and is the commander of an air force electronic warfare battalion. He holds both Austrian and Swiss citizenship and is fluent in German, English, Swedish, Italian, and French.

Appendix: Online questionnaire

Throughout this questionnaire, please provide the official opinion of your organization, if possible. If no official opinion is available, please provide your best expert opinion/judgement.		
v1	Name of your organization	
Type of organization		
v2	Ministry of Transport / Civil Aviation Authority	0/1
v3	Ministry of Defense / Air Force	0/1
v4	Air Navigation Service Provider (including MUAC)	0/1
v5	Union/Staff association	0/1
v6	Airline	0/1
Your contact details		
v7	Name, First Name	
v8	e-Mail	
v9	Phone number	

How certain is your organization and/or are the members of your organization to be positively or negatively affected by increased integration at FABEC level in terms of financial consequences, cultural implications (1) and/or organizational status (2)?		
v10	Certain	0/1
v11	Likely	0/1
v12	Unlikely	0/1
v13	No effect	0/1
v14	Not assessable	0/1

(1) Cultural implications refer to any kind of impact on your organization expected to result from integration that is related to cultural aspects (ideologies, religion) or personal convictions.

(2) A change in organizational status refers to any expected changes in function and/or hierarchical position or working location of an individual member of your organization resulting from integration.

Will these effects be positive or negative?		
v16	By the majority positive	0/1
v17	Both positive and negative	0/1
v18	By the majority negative	0/1
v19	No opinion / not assessable	0/1

v20	Please specify the expected POSITIVE effects

v21	Please specify the expected NEGATIVE effects

How significant do you assess the (positive or negative) impact of increasing integration in the framework of FABEC on your organization or on the members of your organization? In other words: How significant is FABEC for your organization?		
v23	Very significant	0/1
v24	Significant	0/1
v25	Little significant	0/1
v26	Insignificant	0/1
v27	Not assessable	0/1
v28	No opinion	0/1

What percentage of your organization's members do you estimate to benefit or lose from FABEC integration in financial and/or cultural (1) terms or in terms of organizational status (2)?		
v30	Benefit	%
v31	Lose	%
v32	No effect	%
v33	Not assessable	0/1
v34	No opinion	0/1

(1) Cultural implications refer to any kind of impact on your organization expected to result from integration that is related to cultural aspects (ideologies, religion) or personal convictions.

(2) A change in organizational status refers to any expected changes in function and/or hierarchical position or working location of an individual member of your organization resulting from integration.

If you expect positive effects from FABEC for your organization, how high do you perceive the risk that these effects will not materialize due to delayed or insufficient integration?		
v36	Very high	0/1
v37	High	0/1
v38	Low	0/1
v39	No risk	0/1
v40	Risk not assessable / uncertain	0/1
v41	No opinion	0/1

Until present time, has your organization in any way been involved in or tried to influence the development or design of FABEC/the FABEC State Treaty/any FABEC related matter?		
v43	Yes (please specify type of involvement below)	0/1
v44	No	0/1
v45	Don't know	0/1

The voting procedure in the FABEC Council, according to the FABEC State Treaty, is the unanimous vote. Which voting procedure would you prefer for the FABEC Council?		
v47	Unanimity	0/1
v48	Qualified majority	0/1
v49	Majority	0/1
v50	No binding vote / consultative only	0/1
v51	No preference / no opinion	0/1

What legal options would you prefer to enforce FABEC policy decisions?		
v53	Appeal to European Commission / European Court of Justice	0/1
v54	Appeal to a Court of Arbitration	0/1
v55	Use of a mediation procedure	0/1
v56	There should be no enforcement mechanism	0/1
v57	No opinion	0/1

Irrespective of the current provisions in the FABEC State Treaty, and irrespective of whether the Council's vote is unanimous, by qualified majority or by majority, which of the following regulatory functions should be carried out at FABEC level?		(several replies possible)
v59	Definition of National Supervisory Authorities' institutional setup	0/1
v60	Definition of ANSP institutional setup/model	0/1
v61	Definition of safety management policies	0/1
v62	Definition of ANSP performance objectives	0/1
v63	Definition of airspace and capacity management (including air traffic flow management) principles	0/1
v64	Definition of airspace and route network design (excluding military airspace)	0/1
v65	Definition of airspace and route network design (including military airspace)	0/1
v66	Definition of location & area of responsibility of civil area control centers	0/1
v67	Definition of location & area of responsibility of military area control centers	0/1
v68	Definition of ATM operational standards and procedures	0/1
v69	Definition of principles for civil-military cooperation	0/1
v70	Definition of charging policy / en-route unit rates	0/1
v71	Definition of ATM technological standards for the FABEC area	0/1
v72	Definition of aeronautical information management standards	0/1
v73	Definition of air navigation services training standards	0/1
v74	No opinion	0/1

What is your preferred institutional model for (National) Supervisory Authorities/regulators within FABEC?		
v76	Status quo (one NSA per country)	0/1
v77	One Supervisory Authority for the entire FABEC	0/1
v78	Other (please specify below)	0/1
v79	No preference / no opinion	0/1

What is your preferred ANSP institutional model for FABEC?		
v81	Contractual cooperation model (no centralized management)	0/1
v82	Alliance model (centralized management only in selected functional areas)	0/1
v83	Single ANSP (fully centralized management)	0/1
v84	Other (please specify below)	0/1
v85	No preference	0/1

In an Alliance model, which of the following functions should be centrally managed?		(several replies possible)
v87	Safety management	0/1
v88	Performance management	0/1
v89	Airspace and capacity management (including Air Traffic Flow Management)	0/1
v90	Civil air traffic control service (GAT)	0/1
v91	Military air traffic control service (OAT)	0/1
v92	Collection of charges	0/1
v93	Selection and procurement of ATM technical systems	0/1
v94	Aeronautical information management	0/1
v95	Air Navigation Services (ANS) staff training	0/1
v96	Relations with social partners (including negotiation of labor contracts)	0/1
v97	No opinion	0/1

What is/are your preferred scenario(s) with regard to the number and location of area control centers in the FABEC area?		(several replies possible)
v99	Status quo	0/1
v100	Status quo with harmonized ATM technical systems and procedures	0/1
v101	Status quo, but "virtual center" with fully interoperable technology	0/1
v102	Reduced number of control centers (possibly also with "virtual center" technology)	0/1
v103	Single control center for the entire FABEC (excluding military ATC)	0/1
v104	Single control center for the entire FABEC (including military ATC)	0/1
v105	No opinion / no preference	0/1

If you would like to see a reduction of area control centers (including upper and/or lower centers, excluding approach control units) in the FABEC area, how many of them should there be and in which countries should they be located? (please enter numbers)		Upper ACC	Lower ACC	Upper/ Lower ACC combined	Military ACC (OAT)
v107	Belgium				
v108	France				
v109	Germany				
v110	Luxemburg				
v111	The Netherlands				
v112	Switzerland				

To what extent is your organization normally involved in political decision-making processes related to your area of activity?		(several replies possible)
v115	Co-decision on all relevant matters	0/1
v116	Co-decision on selected matters as decided by your organization	0/1
v117	Co-decision on selected matters as decided by government authorities	0/1
v118	Formal consultation on all relevant matters	0/1
v119	Formal consultation on selected matters	0/1
v120	Informal consultation initiated by government authorities	0/1
v121	Informal consultation initiated by your organization	0/1
v122	Informal contacts to individual government officials	0/1
v123	No involvement	0/1

With how many of the following officials does your organization maintain regular contacts (min 2 contacts per year) with the aim to influence policy decisions in your area of activity? (if unable to enter exact numbers, please state "YES" and comment on intensity below)		
v125	Members of parliamentary committees preparing policy decisions related to your area of activity	
v126	Government officials drafting policy proposals related to your area of activity	
v127	Leaders of political parties	
v128	Others (please specify)	

What is the structural level of leadership/hierarchy in your organization?		(Situation 2010/2011)
v131	Institutionalized management body (e.g. formal leader, executive board) with discretionary power over (hierarchically subordinate) group members	0/1
v132	Institutionalized management body (e.g. formal leader, executive board) without legal authority over group members (democratic structure, authority based on persuasive power only)	0/1
v133	Informal leadership (ad hoc or permanent)	0/1
v134	No leadership structure	0/1

Do you enjoy the legal right to pursue industrial actions?		(Situation 2010/2011)
v136	Yes	0/1
v137	Yes, but only under certain conditions (please specify below)	0/1
v138	No	0/1

Are there any alternative organizations available to take over your specific functional tasks in case your organization decides to interrupt your activities (e.g. in case of industrial action)?		(Situation 2010/2011)
v140	Yes	0/1
v141	No	0/1

How many alternative organizations are available?		
v143	Please enter exact number	

Within which timeframe are these alternative organizations able to take over your organizations' activities?		
v144	Without delay	0/1
v145	Within days	0/1
v146	Within weeks / months	0/1

Government-specific questions

How would you assess the negative implications for your country, should integration / policy coordination in the framework of FABEC be insufficient or fail?		
v337	Very significant	0/1
v338	Significant	0/1
v339	Little significant	0/1
v340	Insignificant	0/1
v341	Not assessable	0/1
v342	No opinion	0/1

Do you recognize any opportunities to join alternative coalitions/FAB programmes in case FABEC should not materialize?		
v345	Yes	0/1
v346	No	0/1
v347	No opinion	0/1

To accommodate your country's needs and requirements in the negotiation process about the development of FABEC, do you recognize • any room for compromise in certain areas related to FABEC that are less important to you? • any possibility to link the FABEC issue to (open) issues in other policy areas? • any options to offer side-payments for certain concessions?		
v349	Yes	0/1
v350	Yes, but only limited options	0/1
v351	No	0/1
v352	No opinion	0/1